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# SOUTHWESTERN MEDICINE

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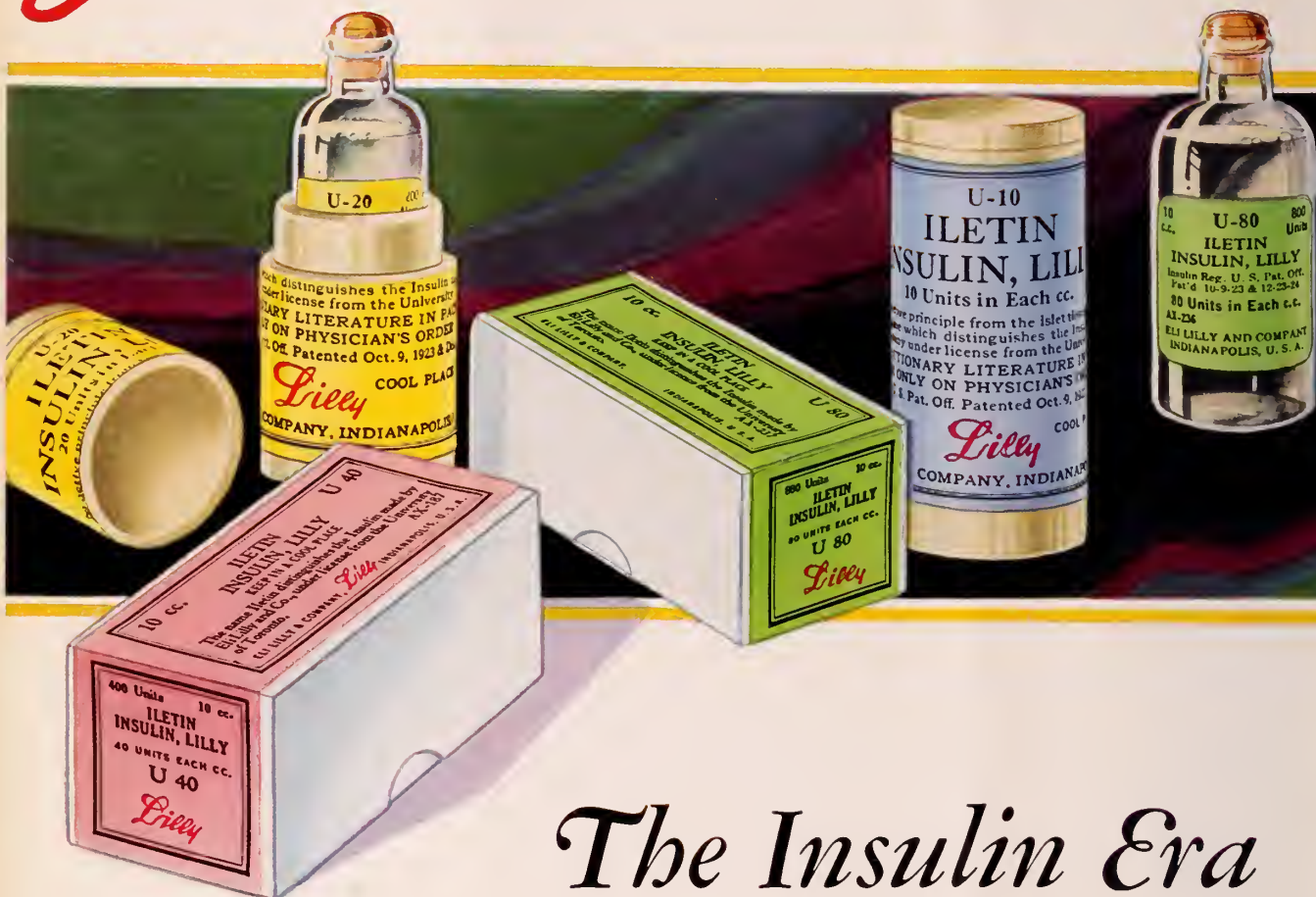
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## PEPTIC ULCER

### Limitations of Surgical and Medical Treatment

F. D. GARRETT, M. D.  
El Paso, Texas.

(Read before the Medical and Surgical Association of the Southwest, at the fifteenth annual session, held at Phoenix, Ariz., Nov. 7 to 9, 1929).

Studying the more or less accepted indications for treatment of peptic ulcer, it seems to the writer that there is what may be called a "twilight zone," to which enough attention has not been paid. This paper is devoted to this field and to making the indications for medical and surgical treatment more definite.

It is agreed that medical treatment is indicated in simple uncomplicated peptic ulcer. Surgery is done: To make the diagnosis clear; to prevent cancer from developing on chronic ulcer; to repair perforations; to control hemorrhage; to relieve pyloric stenosis; to relieve the symptoms and prevent recurrence. I would like to consider each of these indications for surgery.

### EXPLORATORY OPERATIONS

Most of us know that it is sometimes difficult to make a positive diagnosis, especially within the time usually devoted to examinations, even with the best of consultation and laboratory aid. If it is important for the internist to make a diagnosis before beginning treatment, it is even more important for the surgeon to do so, in my opinion, before undertaking an operation. In the case of the physician who has not made a positive diagnosis, there is always something that he can do to improve the patient's condition, meantime keeping the patient under observation. Within a pe-

riod of ten days or two weeks a diagnosis can be made in many cases. The important point is that the physician shall have the knowledge, training and desire to study the patient and his symptoms very closely. In the case of the surgeon, what damage can be done, except in emergency cases, by waiting a few days or even a few weeks? But in many cases an operation is done without a diagnosis and the best interest of the patient has not been served. Blood is lost, there is a wound to heal, a scar remains, a certain amount of risk has been taken, and perhaps nothing definite accomplished. There are some surgeons, but not all, I am glad to say, who declare that one should not lose time with prolonged examinations. They would explore and see. But even with an open abdomen the pathological process, granted that the diseased organ is accessible, is frequently overlooked; and if found it may be impossible to make an exact diagnosis by inspection; for example, in gastro-intestinal hemorrhage. I will admit there are exceptional cases where exploratory operations are justifiable. But let us study our patients sufficiently long and carefully and at least have a clear conception of the problems involved and what the operation is to accomplish.

### OPERATIONS FOR PREVENTION OF CANCER

Unquestionably a small percentage of cancers develop on old gastric ulcers. Cancer from duodenal ulcer is exceedingly rare. The combined reports from clinics where careful studies have been made indicate that cancer develops on about one gastric ulcer in twenty. In my observation and study of about four hundred peptic ulcers, of which some sixty have been gastric, there were only two cases of cancer which

developed after elective ulcer treatment and one of these had been urged to have an operation prior to treatment, but refused. We sometimes hear the assertion made that half of the stomach cancers have developed on old ulcers. This is not in accord with clinical experience. I think that the two diseases are confused by mistaking for an ulcer the necrotic area which develops on a carcinoma; in other words confusing cause and effect. All of us have seen patients who have suffered many years from ulcer of the stomach. They continued to live and did not develop cancer. Cancer of the stomach has a short history of digestive disturbance of rarely more than six months duration.

It does not seem justifiable to subject nineteen patients, who are in no immediate danger, to the risk of radical operation, in order to try to save one from possible cancer. I realize that if we are to save our patients from cancer it is necessary that operation be done early. In most cases careful examination and history will make the diagnosis clear. If cancer be found a carefully planned elective operation can be done. In passing I would stress three sources of information as being most important in the differential diagnosis between peptic ulcer and cancer; first, a good history; when a previously healthy person develops more or less constant gastric distress with rapid loss of weight cancer is probable. Second, the repeated finding of occult blood in the stomach contents and stools of a patient on a meat free diet is often a very early finding in cancer. Third, careful x-ray examination is of the utmost importance and many times gives invaluable information. I would refer you to Carman's classical description of the x-ray findings in malignant cancer. Reduced or absent hydrochloric acid and the presence of lactic acid are important but late symptoms.

#### OPERATIONS FOR PERFORATING ULCER

There is a vast difference between a perforating ulcer and a perforated ulcer. A perforated ulcer produces characteristic and unmistakable symptoms. The sudden onset of severe pain in the epigastrium, increasing rapidly in intensity, accompanied by epigastric tenderness, profound shock, and board like rigidity of the abdominal wall, in a person with ulcer history is almost diagnostic. There are two stages of perforating ulcer and the symptoms and indications for treatment are different in each stage. In the first stage the ulcer may have the muscle coat of the bowel for

a base but the peritoneal coat is never ruptured. There is pouching at the base of the ulcer which gives rise to the x-ray niche so well shown in the films. The patient complains only of the usual ulcer symptoms and local signs of peritoneal irritation are absent. Operation is frequently advised for this type of patient on account of the supposed danger of complete perforation. In my experience this type of ulcer responds to medical treatment, careful diet, and rest in bed. The second type of perforating ulcer is accompanied by sharp intermittent, crampy pain, with localized rigidity over the site of the ulcer. There is complete absence of shock. A slight leak has occurred but not enough to cause more than localized reaction. The area of perforation may, and usually does, become attached to the omentum or adjacent viscera. Operation is indicated in this type of ulcer because of the possibility of serious complications. But it is well to remember that with rest, heat, oral starvation, and proctoclysis for forty-eight hours, some of these cases will recover under medical treatment if operation be refused.

#### OPERATIONS FOR HEMORRHAGE

Some time ago opinion was divided as to the indications for surgery in acute hemorrhage from peptic ulcer. Today surgeons and internists agree that it is best to treat such cases medically because the operative mortality is very great. In my experience I remember only one death from acute hemorrhage of peptic ulcer. In cases of severe and repeated hemorrhages from an old fibrous ulcer it is best to wait for the interval between the attacks and get the patient in good condition before operating.

#### OPERATIONS FOR PYLORIC STENOSIS

In these days too much reliance is placed on x-ray findings and too little attention is paid to clinical symptoms. One half, three-fourths, or complete food retention at six or even twelve hours, means only that there is pyloric obstruction. It should be proven that the patient has permanent pyloric obstruction before he is subjected to operation. In our experience by far the larger percentage of cases of pyloric obstruction have turned out to be pylorospasm and could have been relieved by proper management and medical treatment. The subsequent treatment of the ulcer after pylorospasm has been relieved differs in no way from that of uncomplicated ulcer, except that rest in bed should be insisted upon in every case.

Cases of pyloric obstruction have very



marked hypersecretion. Before coming under the care of the physician their tissues are more or less dehydrated and the alkaline reserve in the blood has usually been increased. They are poor subjects for operation. By way of treatment, we give atropine and empty the stomach morning and night of the accumulated food and gastric juice. At night, advantage should be taken of this opportunity to introduce two or three ounces of warm olive oil before withdrawing the tube. If we are dealing with real stenosis the jejunal contents rapidly diminish and usually after five or six days become normal. It is possible to begin feeding small quantities of food the first day of treatment and alkaline control should be maintained during the whole twenty-four hours. These cases are peculiarly apt to develop alkalosis and it is important to give them large quantities of fluid in the form of normal saline with glucose per rectum or intravenously. If alkalosis with vomiting should occur the alkaline routine should be discontinued. If the obstruction does not yield to this type of treatment it should not be prolonged beyond a few days and the patient may now be operated with far better chances of recovery.

#### OPERATIONS FOR RECURRENT ULCER

Recurrence of peptic ulcer after surgical or medical treatment is due to the factors which produced the ulcer and favored its chronicity before the treatment. The treatment fails many times because the patient is led to consider himself cured too soon. If he is discharged at the end of three or six weeks after operation and a brief stay in the hospital with the idea that he is cured, and has no further oversight, the chances are that he will relapse. Treatment should take into consideration all of the contributing factors which may be present. Habits of living, social environment, personal habits and occupation, should be considered with as much care as focal infection, upon the clearing up of which we lay much stress. It would be unprofitable to discuss all of the theories of the cause of peptic ulcer, but there is one factor which is so common that it should be taken into consideration in all cases.

In about four hundred cases of peptic ulcer at least eighty-five percent have shown

signs of nervous instability in the form of hyperacidity, hypermotility, pylorospasm, cardiospasm, or spastic colon. There were signs of unstable emotional tone and a tendency to overwork and overdo in all directions. They were often hard to control and keep on a prescribed routine. The success of any treatment, medical or surgical, depends upon the success of the physician in controlling the patient over a period of at least three years. Not that the case should end there, but during this time the changed habits should have become permanent enough to last during life. It is not enough to tell the patient not to smoke, not to drink coffee, liquors, or carbonated drinks and not to overeat. He must be shown why and be impressed that the chances of a relapse depend directly upon his faithfulness to the prescribed routine. He must be shown the importance of adequate rest and play, and learn to live the simple life free from worry. He should be taught to avoid tendencies to expend unnecessary amounts of nervous energy in any direction and how to relax at frequent intervals during the day. The nervous factor is responsible for the perpetuation of hyperacidity and when we have controlled this factor as nearly as possible the chances for relapse are minimum.

#### COMMENTS

It is not justifiable to do an exploratory operation to make a diagnosis unless a sufficiently long and careful study has failed.

It would not seem justifiable to subject a patient with peptic ulcer to the risk of radical operation to prevent cancer.

It is important to distinguish between the two types of perforating ulcer. In one the diagnosis is made by the x-ray, has no symptoms of perforation, and responds to medical treatment. The other has intermittent pain and strictly localized peritonitis and is most safely treated surgically.

The necessity for operating on account of recurrent hemorrhage from peptic ulcer occurs rarely but an interval operation should be done.

Pyloric stenosis is very much rarer than pyloric obstruction from spasm. Care should be taken to differentiate between the two conditions. Treatment over a period of several days makes the diagnosis clear.

Recurrence of peptic ulcer is always due to failure to keep the patient under observation sufficiently long and to failure to remove all the factors in the etiology.

## ILLUSTRATIVE CASES.

CASE 1. L. L., physician, age 52. Principal complaint, epigastric distress most marked one or two hours after meal.

Relevant past history; hard worker, smoker, coffee drinker, periodically alcoholic. Ulcer history dates back five years; symptoms more marked during last two or three months. Appetite is good but on a self restricted diet has lost ten pounds.

Principal points in physical examination indicate a poorly nourished, anemic patient; some fibrosis of lungs on account of old tuberculous process; epigastric tenderness. X-ray examination (Fig. 1) shows a large niche defect on posterior wall of stomach, with incisura opposite.

Diagnosis: Perforating ulcer on posterior wall of stomach at level of an incisura.

Treatment: Rest in bed. Modified Sippy. Patient's condition is satisfactory six months later, with some gain in weight. There is a strong probability of malignancy in this case.



CASE 2. G. R. H., farmer, age 26. Principal complaint of epigastric distress coming on about two hours after meals.

Past history of influenza in 1919; ulcer history dates back two years. Lately he has been vomiting at night and sometimes during the day; smokes; drinks coffee.

Physical examination shows a well nourished patient, very irritable and bad tempered. Breath foul due to extensive pyorrhea. X-ray examination (Fig. 2) shows niche on lesser curvature.

Diagnosis: Perforating ulcer on lesser curvature.

Treatment: Patient unmanageable. Would not enter hospital for medical treatment and refused operation. His wife carried out the treatment advised, she said, at home. He felt well for two years. He returned a few days ago saying that he had had trouble off and on for the past year. X-ray examination showed recurrence of ulcer. His mouth is still foul. No cooperation.



CASE 3. Sra. L. L., housewife, age 53. Principal complaint, epigastric distress with incomplete food relief; requires codein to relieve pain.

Past history of good health until six months ago, with more or less distress every day since.

Physical examination shows a well nourished patient, five feet in height. Marked epigastric tenderness and slight local muscle spasm. Free HC1 30 total acid 55. Occult blood in stools and stomach contents. X-ray examination (Fig. 3) shows niche on lesser curvature.

Diagnosis: Perforating ulcer high on lesser curvature.

Treatment: Operation advised but refused. Bed rest and modified Sippy carried out. Patient cooperated loyally and continues to do so. X-ray examination two and a half months after beginning treatment shows the ulcer healed. At the present time (six months later) she feels well.





## THE SURGICAL ASPECTS OF GASTRIC ULCER

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(Read before the Medical and Surgical Association of the Southwest, at its fifteenth annual meeting, held in Phoenix, Ariz., Nov. 7-9, 1929).

These cases should not be subjected to operation until they have had a fair try-out with a systematic medical regime. In cases which are not well marked we are sometimes puzzled to know whether or not we have a gastric or duodenal ulcer, cholecystitis or cholelithiasis, chronic appendicitis or whether the condition is due to extreme constipation or a simple hyperacidity. All of these conditions and others may have to be discussed. There are possibly few conditions in the abdomen which present so many different symptoms, and on the other hand, perforation of stomach ulcer is encountered in patients who have had little or no trouble at all. I recall several instances where the patients stated they had never suffered with their stomachs and could eat anything they wished. There are others, however, who have all the classical symptoms of ulcer but go on indefinitely.

It is not my purpose to go into symptoms, causes, etc., of ulcer but to give you in my short paper a brief report of my personal experience. When these cases show up for operation they have usually been treated and diagnosed by the clinician with the assistance of the x-ray man: except in acute cases consequently, will not discuss this phase of the subject. Surgery for ulcer of the stomach is as varied as the symptoms. Many men are doing extensive subtotal resections for ulcer of the stomach, combined with a gastrectomy. Whether you do a simple resection or cauterize and invert the ulcer or whether you combine it with a gastrojejunostomy or a gastroduodenostomy, I think depends somewhat upon the conditions found after opening the abdomen. If I find a perforated ulcer or a non-perforated one for that matter, we excise it, repair the wound in the stomach and do no further surgery. This is especially true with a perforated ulcer, as you can not have a clean field with a ruptured viscus. A gastroenterostomy certainly would increase the mortality, so why add that additional danger and, too, I would consider it only necessary when the ulcer is situated at the pyloric opening or when there is a great amount of infiltration or scar tissue about the pylorus, causing an obstruction; also if you find multiple ulcers of the stomach. Formerly it was the custom to depend on a gastrojejunostomy curing the ul-

cer; at present it is rather the custom to excise the ulcer and do no further surgery unless absolutely necessary.

The most alarming conditions we have in ulcer are hemorrhage and perforation and to illustrate how uncertain the symptoms may be, I will report a case of each.

Not long ago a man was sent into the hospital suffering intense pain in his upper abdomen. We diagnosed his condition as perforation of stomach or duodenum; he refused operation for twelve hours, but finally consented. We found a perforation about the size of a pencil. The ulcer was excised, no further surgery done, patient making a good recovery gaining twenty pounds in a few months, showing he had evidently suffered a long time from his ulcer and did not know it. This patient claimed he had never had any trouble with his stomach, had been in the habit of eating any and everything.

Another case, a patient who had suffered from an acid stomach for several years but had not had any severe pain after eating or at any other time; had never had a hemorrhage. He consulted me and requested that I operate him for appendicitis as he was sure his trouble was due to this condition, since he had been told several times that he had a chronic appendicitis. I examined him and found no tenderness over the appendix nor any rigidity of the muscles and there apparently was no tenderness in his abdomen. Three days later this man died from a hemorrhage and autopsy showed he had two large ulcers on the lesser and posterior curvature of the stomach. I mention these cases to show how uncertain the symptoms are sometimes.

There are others whose symptoms are less well defined, who have persistent sour stomach, constipation, loss of weight. If these symptoms persist after proper medical advice, which I believe every man should have before he is subjected to operation, I feel an exploratory operation should be done and if no pathology is found with the gall bladder, appendix or other organs, even though you find no ulcer, you are warranted in doing a gastroenterostomy of your choice, and frequently get satisfactory results.

There are a few points I would like to emphasize from my own observation.

First, we should not delay an exploratory operation too long when there are persistent symptoms.

Second, all things being equal, if a gastroenterostomy is indicated I prefer one of the several methods of pyloroplasty as it is the more natural drainage for the stomach.

Third, a gastroenterostomy should not be

too small to give the stomach the proper drainage nor should it be too large as to empty the stomach too rapidly. Moynihan says that "the failure in a gastroenterostomy is usually because there was no organic lesion justifying it."

## PERFORATING DUODENAL ULCER

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(Read before the Medical & Surgical Association of the Southwest at the fifteenth annual session, held at Phoenix, Ariz., Nov. 7 to 9, 1929).

The general recognition of duodenal ulcer is comparatively recent. According to Moynihan the first operation for chronic duodenal ulcer was performed in 1893, and the first successful operation for perforating duodenal ulcer in 1894. Hence, many practitioners now in their prime have not been impressed by the importance of possible ulceration in the so called chronic dyspeptic.

Bassler states that in four hundred thousand autopsies ulceration of the stomach was found in one per cent; and that in 59,940 autopsies of various series, healed or unhealed ulcer of the duodenum was found in 4.4 per cent. With these facts on stomach ulcer in mind we may expect duodenal ulcer four or five times more often than ulceration of the stomach.

No attempt will be made herein to deal with the various theories of the cause of duodenal ulcer. Our bickerings with the medical men as to the treatment and etiology of ulcer ceases to be a factor the very instant one of these ulcers perforate. In a review of the recent papers on chronic duodenal ulcer, one gleans rather meager information as to the danger signals of impending perforation. There is little comfort in blaming the medical men for a perforation after his so-called ninth cure. To my knowledge no one has as yet been able even remotely to state which of these chronic ulcers will remain cured after medical treatment, and which will perforate with or without medical treatment. One of my own cases perforated after several days in bed under a rigidly restricted diet. Another perforated a few weeks after receiving a clean bill of health from a clinic that we have perhaps all visited and held in high regard.

It is quite evident that we are in an era of indecision as to the proper and immediate treatment after a chronic ulceration has been diagnosed. Once a positive diagnosis has been made, right then a prompt decision as to treatment should be made. Our responsibility is immediately greater, and if for no other reason than for our own self protec-

tion, a full knowledge of his danger should be explained to the patient. He should be told that temporary relief, possible cure or ultimate perforation can be expected.

Dreyfus, in a recent work, feels that some duodenal ulcers are likely surgical from their very beginning. He frankly admits that we have no way of determining which of them will heal, and which of them when healed will leave a constriction that will demand surgical intervention.

What, then, should we advise these patients with chronic ulceration? If the surgeon could promise one hundred per cent cures with operation, the answer would be easy. And the same holds true with the medical man. In surgical interference, despite the excisions, short circuits and various plastic operations, in the most experienced hands, we still have our marginal ulcers, recurrences and even repeated perforations in rare instances.

The percentage of medical cures in actual figures seems to be rather vague. Some of the surgical clinics are claiming as high as ninety per cent cures in chronic ulceration. Perforation following operation is almost nil compared with perforation following treatment. Surgical mortality in the various operations for chronic ulcer in recent years is low. On the other hand, Deaver recently stated that twenty per cent of duodenal ulcers eventually preforate with a mortality of as high as seventy-five per cent. With the above preface and the calamity of perforation in the background, and with neither medicine nor surgery effecting a hundred per cent cure, would not the following compromise be fair to the patient, the medical man and the surgeon? A thorough medical treatment over a reasonable period of time with frequent clinical and laboratory examinations. Eradication of discoverable foci of infection and good general management. If symptoms and findings have not disappeared, recommend surgical treatment. Second, if all symptoms and findings do disappear and later reappear, again immediately interfere surgically.

With our limited knowledge of the physiology of the duodenum, it would seem good reasoning to conclude that in obstinate ulcers or recurrent ulcers, the cause has not been ascertained and that the alteration produced in the function of the stomach and duodenum by a plastic operation will effect the greater number of cures.

An apparent danger of medical treatment is the false sense of security that exists in the mind of the patient as soon as symptoms abate. With diet, rest, alkalies, he is



free from pain, and immediately forgets his diet and his rest, his medicine as well as his physician. Furthermore, duodenal ulcer, so frequent in the male, attacks him in the most active period of his life, and it is natural for him to revolt from diet or any restriction that tends to dominate his life. Were these facts not true few duodenal ulcers would need surgical treatment and perforations would be extremely rare. The patient may listen attentively to us while we are mapping out a six months to three years mode of living for him. Yet few will follow instructions after the abatement of symptoms.

In the diagnosis of chronic duodenal ulcer three features stand out in the majority of cases; history of pain in relation to food intake, high acidity, and duodenal cap deformity. Dreyfus states that the x-ray will show duodenal ulcer in ninety-six per cent of cases. However, it is well to bear in mind that the very first evidence of duodenal ulcer may be hemorrhage or perforation. Differential diagnosis of acute perforation without a positive history of preceding chronic ulceration is difficult to make. Yet there is perhaps no other acute abdominal condition wherein time is such an important factor. In this Western country we boast of our wide open spaces and magnificent distances, but the doctor in the town not equipped with hospital facilities, who is called to attend any acute abdominal condition, is confronted with a grave responsibility. To split hairs over a diagnosis will mean a life.

Briefly, the picture of an acute perforated duodenal ulcer is as follows; sudden acute pain in the upper abdomen and lower chest, rapid, short respirations, subnormal temperature, pulse not rapid in proportion to respirations, face grey and perspiring, the patient does not want to be examined, the knees are drawn up and the abdomen board-like in rigidity. In other words, the patient is sicker and appears sicker than in any other abdominal condition with the exception of acute pancreatitis, and acute pancreatitis is an extremely rare condition. In the past eight years the writer has operated ten cases of perforated duodenal ulcer and during that time has never seen a case of acute pancreatitis. The blood count in the beginning of the perforation is usually unchanged.

In speaking of the time element in perforating duodenal ulcer, W. J. Mayo informs us that a mediocre surgeon operating in the first six hours will have a much lower death rate than the master surgeon operating af-

ter eighteen hours. Up to the present time the patient with a perforating ulcer in an isolated community has been doomed. The advent of the aeroplane combined with more alert medical attention will save many of these cases in the future.

We all agree that immediate operation is necessary in acute perforation. The pendulum seems to swing back and forth concerning what should be done at operation. It would seem to be unwise to attempt to standardize surgical treatment for all perforating ulcers. The majority of surgeons at present seem to feel that a simple closure of the ulcer is the safest method. There are perhaps a small percentage of these cases, with the patient in good general condition, and a small amount of leakage into the peritoneal cavity, where a short circuit can safely be done. This is particularly true in the so called subacute cases. With the proper surroundings the gastroenterostomy has the double advantage of relieving the tension on the suture line of the closed ulcer as well as permanently curing the condition. In the great majority of cases simple closure of the ulcer is perhaps the safest. In my own cases cigarette drains have been installed. In the subacute cases, or in the cases of operation immediately after perforation, drainage is likely more harmful than helpful. Bacteriological examination of the stomach or duodenal contents taken at the operating table after recent perforation is usually sterile. This of course is not true in the late cases. A thorough aspiration of the abdominal cavity should of course be attempted. The use of the duodenal tube in the stomach after operation is particularly valuable in these cases.

The following series of ten cases of perforating duodenal ulcer have been operated by the writer in the past eight years. The high death rate has prompted me to write this paper. The fact that a recognized duodenal ulcer is allowed to go on to perforation is a reflection on us all. Medical men would do well to listen attentively to the history of patients with digestive disturbances and not pass them off too lightly. More stomach analyses should be made and more use made of the roentgenologist.

CASE 1. Farmer, age 34 years. Admitted to the hospital March 24, 1921. Diagnosis, acute appendicitis. Operated March 24, 1921, at which time appendix was removed and drain installed. The above case was operated and managed by another surgeon. April 18, 1921, twenty-five days after the above operation the patient was first seen by the writer, the attending physician being out of town. It seems this patient had gradually grown worse from the time of his operation twenty-five days previous. Examination showed the patient in extremis. A large mass filled the



whole of the upper abdomen to a point somewhat below the umbilicus. The patient had been vomiting for several days and was greatly emaciated. His bowels had moved with enemata. Diagnosis of localized peritonitis secondary to an appendectomy was made. The patient was given a blood transfusion and an incision made through the right rectus in the upper abdomen. A large amount of foul smelling pus and particles of food immediately came through the incision. Nature had made heroic efforts, over a period of several weeks, to wall off what must have been a small leaking perforation in the duodenum. While over one half of the abdomen was taken up with the abscess this patient had never developed a generalized peritonitis. The perforation in the duodenum was fully as large as a ten cent piece. The mucous membrane was pouting through the aperture. In conversation with one of the assistants at the previous operation, I was informed that the patient had rather an angry looking appendix and there was some milky fluid in the peritoneal cavity, but the appendix proper had not perforated. It is quite possible that this patient had a small perforation that was overlooked at the time of the appendectomy. An attempt at closing the perforation was made and drainage installed. The patient died within twenty-four hours.

CASE 2. Peace officer, age 31 years. Admitted to the hospital December 10, 1921. This patient was seen at his home at 4 p. m. on the day of his admission. He stated that he had had a severe pain in the abdomen that woke him up at two a. m., fourteen hours before being seen by me. It seems he had gone to bed an hour before, after consuming a large quantity of alcoholics and food at a wedding party. Various home remedies had been given him and by morning he was somewhat relieved. He had some abdominal distress during the day. He was sitting up in a chair fully dressed when first seen by me. Examination revealed a moderate amount of rigidity all over the right side and epigastrium. Pulse was 74, temperature 100°. This patient walked to an automobile and was taken about one mile to the hospital. His white blood count was 9,000. No red count or differential was made. Diagnosis of a moderately acute appendicitis was made. His abdomen was opened at 7 p. m., three hours after admission. An innocent appearing appendix was removed. We were on the point of closing the abdomen when a small amount of milky fluid appeared in the upper angle of the incision. The incision was immediately extended upward and examination of the duodenum showed a plastic lymph exudate in the center of which was a perforation about the size of a pin head. There had been but little leakage of fluid into the peritoneal cavity. The perforation was closed, a posterior gastroenterostomy performed and cigarette drain installed. Patient was dismissed in seventeen days in good condition.

CASE 3. Section laborer, Mexican, age 49 years. Admitted to the hospital June 22, 1924. This happened to be in the middle of the afternoon on Sunday, and as the laboratory technician was not in, no blood count was made. The attending physician called me on the telephone, informing me that he had a case of acute appendicitis and that I should come to the hospital to operate. Upon my arrival the physician, absolutely sure of his diagnosis, had the patient in the operating room and partially anesthetized. Hence, no examination was made by me. Upon opening the abdomen a thin fluid was found free in the peritoneal cavity. The appendix appeared normal. Upon enlarging the incision we found a minute perforation in the duodenum with the usual surrounding exudate. The perforation

was closed and a posterior gastroenterostomy performed. The patient was discharged in two weeks in good condition.

CASE 4. Retired meat cutter, age 59. Admitted to the hospital October 27, 1924 for fractured clavicle following a street fight after several days of alcoholic intoxication. After regaining his mental equilibrium he informed his physician that he had been suffering for a number of years with stomach trouble, and about the only thing that relieved him was drinking freely of alcoholics, further stating that as long as he was in the hospital he would like to have an x-ray examination of his digestive tract. On October 31, at eight in the morning he was given the usual barium sulphate meal. He was on the table at two p. m. for his six-hour observation when he was taken suddenly with a violent pain in the upper abdomen and lower chest. His physician and myself saw him at the hospital a few minutes after he was stricken. He was sitting in a chair in his room with rapid short respirations, perspiration pouring from his face which appeared ashy. His pulse was small, he refused to be moved, in fact, refused to be examined. From the high location of the pain a diagnosis of angina pectoris was made. Morphine and nitroglycerin were administered hypodermically. This patient was again seen by me ten hours later. At this time his symptoms were abdominal and we immediately suspected a perforation. He was taken to the operating room where the diagnosis was verified by the fact that the opaque meal was spread over the whole abdominal cavity and not confined to the intestinal tract. His abdomen was opened, and most of the barium meal immediately came through the incision. An attempt was made to aspirate the free fluid in the abdominal cavity. There was a good sized perforation in the anterior wall of the duodenum. A simple closure of the perforation was made and a tag of the omentum sutured over it. This patient died four days later of a general peritonitis.

CASE 5. Artist, age 25. Digestive disturbances for nine years. History of irregular treatment for syphilis. Admitted to the hospital at 2:30 p. m. on June 30, 1926. It seems that morning at 11:30 he was having his spine adjusted by a chiropractor for the cure of this digestive disturbance, when he was suddenly stricken with a violent pain in the abdomen while on the chiropractor's table. The chiropractor helped him to his automobile and drove him to his studio where copious amounts of sodium bicarbonate solution were given by mouth as well as several quarts by rectum. No relief. Then a medical man was summoned. When this patient was seen by me the abdomen was markedly distended and dull on percussion, with a board-like rigidity. His pulse was 80, mouth temperature 97 on admission to the hospital. His white count was 7,700, polys 56, small lymphocytes 40, faint trace of albumin in urine, and many granular and hyalin casts. Diagnosis of perforating duodenal ulcer was made in this case. Upon opening the abdomen upwards of a gallon of water and food particles came through the incision. There was no difficulty in locating the perforation as a stream of clear water spurted through the hole maintaining the level of two or three inches above the gut. The fluid was aspirated from the abdomen. We contented ourselves with a simple closure of the perforation. Small stab wounds were made in either flank and a cigarette drain from each side installed, as well as one in the upper incision. This patient was discharged from the hospital twenty-six days later. He now has an incisional hernia in the upper abdomen.

CASE 6. Clerk, age 20. Admitted to the hospital April 28 at 8 p. m. He had been having some digestive disturbances for several weeks. He was taken with acute cramp like pains in the abdomen about an hour before admission to the hospital. This patient had a typical board-like abdomen. His pulse was 88, temperature 98, white blood count 3,600, polys 58, urine negative. Perforating ulcer was suspected. Upon opening the abdomen of this patient we found a moderate amount of flocculent fluid with a perforation in the anterior wall of the duodenum about the size of the lead in a lead pencil. A simple closure of the ulcer was done. A stab wound was made in the midline above the pubes and a drain installed in the cul-de-sac, as well as a drain in the upper incision. This patient was discharged in thirty-one days.

CASE 7. Electrician, age 47, admitted to the hospital July 31, 1928 at 10 p. m. He had been seen by several doctors during that afternoon and evening. He had been taken with an acute abdominal pain about twelve hours before admission. He refused to go to the hospital, and had several hypodermic injections of morphine without much relief of pain. When called in consultation, we found this patient on the floor by the side of his bed with his knees flexed and in extreme agony. He had taken several enemas, and still refused to be taken to the hospital. This patient refused any attempt at examination of the abdomen, claiming that he could not bear to have his abdomen touched. About fourteen hours after his perforation his abdomen was opened and the perforation in the duodenum closed in the presence of a large amount of free fluid and partially digested food. One rubber tube and two cigarette drains were installed in the incision. This patient died of general peritonitis four days later.

CASE 8. Coal miner, age 22, admitted to the hospital December 8, 1928. This patient had been complaining of indigestion for the past year. He had a gastroenterological x-ray study one year before, at which time a diagnosis of duodenal ulcer was made. He was advised by his attending physician and myself that he should be operated. Operation was refused. His physician mapped out a diet and medical treatment, both of which he refused to follow. His attending physician saw him one and one half hours before his admission to the hospital. He was already sick with a mild influenza when he was taken with a severe pain in the epigastrium. This pain moved down the right side into the iliac region, then across to the left iliac region. At the time of his admission his abdominal pain was general, particularly with respirations or any movement. He had absolute abdominal rigidity. Pulse on admission to hospital was 140, respiration 60, temperature 98. White blood count was 15,000, polys 90. Trace of albumin in urine. Two hours after this patient was stricken a right rectus incision was made through the upper abdomen. A little over one quart of fluid was aspirated. There was a perforation about the size of a lead pencil in the anterior wall of the duodenum. The edges were freshened and the ulcer closed and covered with a small reflection of the omentum. Stab wounds were made in the left and right inguinal regions, a drain installed in the pelvis and a cigarette drain between the stomach and liver. This patient died seven days later of pneumonia.

CASE 9. White woman, age 50, housewife, admitted to hospital December 9, 1928 at 10:15 p. m. Twenty hours before admission this patient was taken with an acute abdominal pain after eating a midnight lunch. A physician was not summoned

until five or six hours later. Hypodermics of morphine were administered for pain. She was one hundred and thirty-five miles from a hospital and it was several hours before a train was due. Upon admission to the hospital her pulse was 110, respiration 38, temperature not recorded. White blood count 14,000, polys 89. Trace of albumin with hyalin and granular casts. Her pupils were markedly dilated and she was delirious. Her abdomen was considerably distended and tender. A tentative diagnosis of acute cholecystitis was made. Her abdomen was opened under local anesthetic. There was a small amount of cloudy fluid in the peritoneal cavity, appendix normal in appearance and a perforation found in the anterior wall of the duodenum. A simple closure of the perforation was made and cigarette drain installed. This patient died two days later. Her mental condition never cleared up. We were never satisfied as to the actual cause of her death, but felt that it was due to some cerebral condition.

CASE 10. This case was operated some two hundred miles from my home at a small hospital and the age and details are not available. This man was an automobile mechanic in his late forties. He was taken with an acute abdominal pain some sixteen or eighteen hours before operation. His physician had made a correct diagnosis of perforating ulcer before operation. Operation revealed a perforation in the anterior wall of the duodenum, with the usual amount of induration surrounding the ulcer. There was a considerable amount of flocculent fluid free in the abdominal cavity. The ulcer was closed and drainage established. The attending physician informed me that this man died three or four days later following a profuse hemorrhage from the stomach. No autopsy was done, hence no information available as to whether the hemorrhage came from the repaired ulcer site or whether there was another ulcer that was overlooked at the time of operation.

You will notice from the above reports that the ages of these patients vary from twenty years to fifty-nine, and that the perforations occurred at practically all seasons of the year. Cases two and three could likely be termed subacute perforations. Gastroenterostomies were performed in these two cases. Both of these cases had the shortest and most uneventful convalescences. Three of the acute perforations were operated within two hours of the attack; one of these died of pneumonia in seven days, the other two recovered. Three of the other cases which averaged about sixteen or eighteen hours from the time of the perforation to the time of operation, ended fatally. There is only one case in which a positive diagnosis of chronic duodenal ulcer had been made prior to the perforation. In this series there are nine males and one female.

#### CONCLUSION

Six deaths out of ten perforations is rather a gloomy record. Our only alibi is late surgical intervention after perforation. To escape from this mortality we must treat these cases successfully before they perforate.



## DISCUSSION

(Papers of Drs. Garrett, Ramey and Hannett.)

DR. FRANK J. MILLOY, Phoenix, (opening):- It has been a pleasure to listen to the papers of Drs. Garrett, Hannett and Ramey. It is very evident that the medical man still favors medical treatment and the surgeon is inclined to surgical treatment.

Dr. Garrett has very conservatively defined the border line of ulcer cases whose treatment should be supplemented by surgery. Dr. Hannett has given us the clinical picture of perforated ulcer and has urged surgical treatment in order to eliminate this serious complication. He has mentioned Deaver's statistics which claim that twenty per cent of duodenal ulcers perforate sooner or later. The late Dr. Sippey's figures were one half of one per cent. Dr. Sippey may be low but it would seem that Dr. Deaver must be considerably high in his estimate, when we remember the fact that four per cent of autopsies show either healed or active duodenal ulcers, and we really see very few perforations. Dr. Hannett has seen ten cases and I can recall about three cases in my ten years of practice. If the average was one per cent, it hardly seems fair to subject 99 patients to surgery for the sake of one perforation. The average mortality for gastric surgery is considerably higher than one per cent. It must be remembered that we are speaking of the average operator and not the expert who performs operations on the stomach and duodenum several times daily.

Acute hemorrhage is never an indication for emergency operation. Rigid ulcer management will always arrest hemorrhage and it has been my experience that these are the medical cases which give the best medical results. The reason for this is that we have these patients in bed five or six weeks at the start and it is much easier to impress on such a patient the seriousness of continuing the treatment for a year or more.

There are several reasons for the failure of medical treatment of peptic ulcer. The commonest failure is probably mistaken diagnosis in taking histories, and inadequate examinations of gastroenterological cases. It is remarkable the number of patients, having digestive disturbance, who have at sometime or other been placed on some form of medical treatment for ulcer of the stomach. A great many of these cases have not been thoroughly examined and sufficiently studied, and do not have ulcer and have failed to get any relief from their symptoms, and the medical treatment for ulcer has been given the blame for failure. The failure to recognize associated appendix and gall bladder disease is another common occurrence. Fifteen per cent of patients with peptic ulcer have cholecystitis. These cases explain many of the so called medical ulcer cases which are classed as partially relieved and also many of the cases with return of symptoms. It has been my experience that a fair percentage of such cases will have a return of their ulcer distress even after a year's treatment. Another common failure of medical treatment is the fact that patients are not required to follow their medical treatment for a long enough period of time. A short period of a month or six weeks of medical treatment merely allows on ulcer to be filled in with granulation tissue. If an ulcer is to be permanently healed, this granulation tissue must be replaced by a normal mucous membrane which contains the normal amount of circulatory and nerve tissue. In order to accomplish this, the course of treatment should extend over a period of six months to a year and even longer in some cases.

If surgical treatment of ulcer could accomplish a high percentage of cures I am sure most every-

one would welcome it. The reason that it does not accomplish better results is because it comes under the head of plastic surgery. The surgery may be either conservative or radical; it may vary from the simplest gastroenterostomy to a complete extirpation of the entire ulcer bearing area of the stomach and duodenum. It always seemed to me that the best way to decide such a question is to consider one's self in the position of the patient. Probably none of us would object to having a diseased appendix removed if we were the patient and I am sure we would feel the same way if we had gall stones, but I really believe the majority of us would consider medical treatment several times before we would have the lower end of our stomach removed or even as much as a gastroenterostomy.

One other point must not be overlooked in the supervision of patients with peptic ulcer and that is the general condition of the patient. Many patients are undernourished or are just sick either from lack of sufficient nourishment or from restricted diets. The human being is omnivorous in his habits. It is probably a serious error to place any patient, and this applies to all types of patient, including hypertension cases and nephritics, etc., on a restricted diet for an indefinite period. It is better after a certain period of specific treatment to forget the organic trouble and place a patient on a general diet containing meat and fruit and vegetables with plenty of vitamins. And after the general condition has improved and several pounds have been gained, return to specific diet again.

In conclusion, let me emphasize the importance of determining by careful study, the presence of associated abdominal pathology in recurrent peptic ulcer, and also the necessity of prolonged cooperation on the part of the patient whether the treatment has been medical or surgical.

DR. E. PAYNE PALMER, (Phoenix):-After listening to these splendid papers and discussion on duodenal and gastric ulcers, I feel that there is not much more to say than Amen, but I have inherited the dominant female trait of wanting to get in the last word.

Combined physical and mental exhaustion are causative factors in duodenal and gastric ulcers. These ulcers do not occur in drones. They are most frequently seen in young men who are hard workers and under mental strain. At the recent meeting of the American College of Surgeons in Chicago, Dr. George W. Crile gave a lecture on the "Influence of the Thyroid and of the Adrenals in the Production and Treatment of Peptic Ulcer." He believes that the over activity of the thyroid and adrenals as a result of this strain is responsible for these ulcers. He has cured obstinate ulcer cases by the removal of one adrenal gland and partial thyroidectomies. The catastrophes of duodenal and gastric ulcers are perforation, hemorrhage and malignancy. No one knows how many people have ulcers, therefore no one knows what per cent perforate or hemorrhage. Most of the statistics given are based on one individual's experience. If it is a gastro-enterologist, his percentage of the total cases seen is small. If it is a surgeon, his percentage of the total seen is large. The reason for this is that the gastro-enterologist sees a large number of cases that are under proper treatment and the surgeon sees many cases that have perforated and hemorrhaged. Most of them have not received proper treatment. In duodenal ulcers hemorrhage and perforation are more frequent, and it is believed that there is greater tendency toward malignancy in gastric ulcers but as yet there is no proof. All cases show more or less advanced chronic duode-



itis or gastritis in various stages. In five to ten per cent of cases ulcers are multiple, duodenal and gastric ulcers coexist.

The particular important question in ulcers, particularly gastric ulcers is, does carcinoma exist? Ulcers larger than 2.5 cm. in diameter usually show carcinoma. Subacute perforating ulcers are rarely carcinomatous. It is impossible to differentiate early carcinoma from simple ulcer by any known clinical means, including the x-ray. Operation should be undertaken when prolonged proper medical treatment has failed to obtain a cure. No one should use one type of operation for all cases; the factors to consider are location and character of the ulcer, the possibility of malignancy, the degree of acidity and the condition of the patient. Posterior gastrojejunostomy gives the largest percentage of cures, estimated at about 90 per cent. This procedure gives its most brilliant result in obstructing ulcers near the pylorus.

Balfour's cautery excision has many advantages. Finney's pyloroplasty is a splendid procedure in healed duodenal and gastric ulcers which obstruct the pylorus and duodenum. Deaver and others are removing the anterior half of the pyloric sphincter muscle with satisfactory results. Partial gastrectomy should be reserved for the saddle ulcers, the multiple ulcers and the ulcers with a suspicion of malignancy. The Billroth or Polya type of operation, or their modifications, are the operations of choice. The surgical treatment should always be made as safe and simple as it is possible with the least discomfort and risk to the patient. The operated cases should be returned to the medical advisor for constant care over a long period of time in order to secure satisfactory results.

DR. GARRETT, (closing):- I am glad to hear the medical and surgical sides of the ulcer question discussed in one symposium. I notice that neither claims to cure all. The surgeon operates and the ulcers return; the medical man treats them and they do not all get well. A certain percentage of them do not get well, whatever the treatment. I would like to emphasize one or two points. Dr. Milloy touched on the diet. It is certainly a mistake to restrict the ulcer patient too much. I do not think the diet is the biggest factor in the management of the ulcer patient; perhaps the habits are just as important. Many ulcer patients are smokers and they rarely get well, and the same can be said of other stimulants which increase the hyperacidity.

DR. RAMEY, (closing):- Just a point or two about the principle difference in the statistics of the surgeon and internist. The acute abdomen does not go the medical man but to the surgeon, and it is a different type of case that is handled by the two men. Dr. Hannett spoke of ulcers having to be differentiated from angina. It must be differentiated from many things, such as appendicitis, gallstones, pneumonia, angina,—all are simulated by perforating ulcer. As to the mortality; in the Michael Reese Hospital, I heard Lahey of Boston say that the mortality was seven or eight percent; I heard Finney, talking on pyloroplasty, say that the mortality was 4.8 percent. Dr. Palmer spoke of Crile; you get the impression from Dr. Crile, which of course he does not intend, that you might look for ulcer in every case of thyroid. He thinks that any condition causing hyperacidity will cause ulcer, and in exophthalmic goitre you nearly always have hyperacidity. If you have ulcer and hyperthyroidism, do the thyroidectomy and in many instances the ulcer will get well. The type of operation will depend on what you find when you get into the abdomen, using your judgment after you see the path-

ology. After gastro-jejunostomy, patients not uncommonly have ulcer at the stoma with stasis in the loop of bowel.

DR. HANNETT, (closing):- With regard to gastro-enterostomy in perforation; in many cases there is induration around the ulcer and in such cases I have not cared to do pyloroplasty. With regard to nature's effort at closing the perforation in ulcer; have never seen any attempt at closure of the ulcer from the outside in any one of these ten cases. I would agree that all ulcer cases should have medical treatment and know that many of them are cured. The unmanageable cases which refuse medical treatment, or the suddenly perforating cases, are the ones which frighten the surgeon and cause us to lean a little toward surgical treatment.

### SOME OF THE LESSONS TAUGHT BY NECROPSY IN PULMONARY TUBERCULOSIS

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Importance must be attached to the relationship that exists between necropsy findings and antemortem diagnosis and treatment in all diseases, and pulmonary tuberculosis is no exception. It is the surest way of learning our mistakes and of obtaining means of avoiding them in the future. At the United States Marine Hospital, Fort Stanton, New Mexico, where only tuberculous patients are treated, a post mortem examination is made on about ninety per cent of the deaths. This is an advantage which few sanatoria have. The medical staff at Fort Stanton realizes this and tries to profit by it as much as possible.

In this paper some of the lessons which have been learned therefrom will be given. These are drawn especially from the last seventy autopsies. Only pathology that has some direct bearing upon the points to be brought out, will be discussed. All unnecessary details and irrelevant facts will be purposely omitted. The findings are based upon the gross pathology for the most part, but a microscopic examination was resorted to whenever it seemed necessary to throw more light upon the subject. All of the patients are beneficiaries of the United States Public Health Service and are, therefore, adult males, and furthermore, all of them that died had pulmonary tuberculosis. The lessons to be emphasized will be taken up separately under the various organs, beginning with those of the chest.

#### PLEURA

The pleura, which is involved in a large number of cases of pulmonary tuberculosis, is of great importance in this disease. Upon its freedom from extensive adhesions de-

pendes the result of our pneumothorax therapy. In this study it was found that in only eight instances was the pleura free from adhesions (less than six per cent). The underlying pulmonary pathology was checked up in these cases and found to show a small cavity in one, some tuberculous infiltration and caseation in two, and scattered healed tubercles in four. Then there were twenty-eight other pleurae in which only slight or moderate adhesions, apical or diaphragmatic for the most part, were present. This gave a total of thirty-six cases in one hundred and forty (about twenty-six per cent), which it was thought might have allowed a suitable pneumothorax collapse of the lung. Perhaps none, or very few, of the remainder would have admitted satisfactory pneumothorax treatment as they showed more or less extensive adhesions, varying from dense ones over the upper lobe only, to a complete obliteration of the whole pleural cavity.

Comparisons of the pleural condition of the cavernous lungs and those without excavation, were interesting. There were only twenty-seven non-cavity lungs, and eighteen of these (or sixty-six per cent) were represented by the thirty-six least diseased pleurae given above as suitable for pneumothorax. In the cavity cases, the strongest adhesions and the thickest pleurae were found and when these were localized they occurred mostly in the vicinity of the excavations. This shows that in these patients at the time of death the condition would have prevented a satisfactory pneumothorax treatment in the great majority. The lesson taught here is that, when an induced pneumothorax is indicated, a prolonged period of observation is not feasible. This applies particularly to patients who have cavities. Our statistics show that dense pleural adhesions will develop in such cases sooner or later. This lesson is of the greatest importance to our patients and should not be overlooked.

#### LUNGS

**Cavities.** Passing on to the lungs, the most striking feature shown was that the x-ray film of the chest showed the pathology found at the postmortem faithfully. This was especially true of intrapulmonary cavities. Having the last film on exhibition at the postmortem, there could be no mistakes in these findings. In every instance in which an annular shadow was seen in the film, it could be accounted for by an intrapulmonary cavity of like location in the lung. This was found to be so, even of those annular shadows without any

marked central rarefaction. In no case could any of them be attributed to either a localized pneumothorax or pleurisy (so-called pleural rings), of which we have read so much, as a possible explanation for some roentgenographic annular shadows.

The postmortem records show forty-eight bilateral cavity cases, seventeen unilateral cavity cases and five without cavities. While not all these were demonstrated in the x-ray, and those shown were not always as extensive as found at the autopsy, still ninety-four per cent of them were diagnosed roentgenologically. With the exception of one where a thickened pleura obscured a cavity shadow, it is possible that most of those that were missed had developed after the last x-ray film of the chest was taken, as these patients were too sick during the last months of life to permit a roentgenogram to be made.

On the other hand, when the physical findings were compared with the necropsy data, it was found that only fifty-eight per cent of the cavities had been correctly diagnosed in these terminal cases. Furthermore, there had been erroneous signs of cavitations in eight per cent. These could be accounted for at the postmortem by fibrosis or consolidation. There were no erroneous findings by the x-ray except in one case, where a large emphysematous bleb at the base showed as a thin-walled annular shadow. This was an atypical pear-shaped shadow and its cause, in the future, should be recognized.

So we have learned that x-ray annular shadows should be interpreted as representing pulmonary cavities. We can never be certain that a patient has not a pulmonary cavity until the physical findings have been checked up by the roentgenogram. Then, when an annular shadow or other signs of cavitation are seen, it must be considered that the patient has a definite cavity, no matter what the physical signs indicate. This is one of the most valuable lessons that we have learned at the postmortem table.

**Hemoptyses.** There were fourteen deaths from pulmonary hemorrhage. Nine of these died during the hemoptysis, and five as a result of a broncho or lobar pneumonia shortly afterwards, no doubt set up by infection from the blood in the respiratory passages. No attempt was made to find out whether these pneumonias were of tuberculous origin or caused by secondary infection. In the text books on pulmonary tuberculosis the mortality from hemoptysis is put down at a very low figure. Fishberg



gives it as two per cent. Much must depend however upon the type of disease treated. At Fort Stanton, including even small hemorrhages, our mortality is well over eight per cent. Also, the frequency of hemoptysis with us seems high. This we do not attribute to the altitude, as Dr. F. C. Smith, a former Commanding Officer, showed that barometric pressure and humidity were not causative factors. It is, no doubt, the type of the disease that alters the mortality. A large number of our patients are far advanced consumptives, as are probably many who come to the Southwest for their health. All the men dying of hemoptysis at this hospital had extensive bilateral or unilateral cavitations. The bleeding seemed to originate in these cavities, in all in whom this point could be ascertained at all.

A note on the status of artificial pneumothorax in the treatment of hemoptysis seems indicated here. We have used it only when the routine treatment had definitely failed. It was tried in five such cases. While it was a life-saver in two of them, who are still doing well at present, the other three were failures. One of them died of an uncontrolled hemorrhage in spite of the compression and the examination after death showed that the bleeding came from an uncollapsed cavity of the upper lobe. The other two contracted fatal pneumonia in the contralateral lung after the hemorrhage had been checked by the pneumothorax.

During the past three years, in which these autopsies were done, there were three deaths from pneumonia following about one hundred large or moderate hemoptyses in which artificial pneumothorax was not tried, and the above two among the five in which the pneumothorax was used to stop the hemorrhage. While the number is small, still a warning note seems warranted as to the danger of a therapeutic pneumothorax setting up a pneumonia in these cases. This is, no doubt, due to the forcing of blood and infected secretions from the collapsing into the uncompressed lung. This happens especially because much higher pressures must generally be given to control the bleeding than are used in the ordinary case. The third lesson, therefore, is that pneumothorax therapy should be reserved as a heroic measure in pulmonary hemorrhages, to be used only when other means have failed and it appears that the patient will die if left alone. To use it earlier carries the risk of having the patient die unnecessarily of pneumonia.

#### HEART

The most interesting point here was the

small size of this organ in so many of the patients. A small, flabby, atrophic heart is the rule in far-advanced phthisis and this is generally in proportion to the great emaciation and muscular atrophy of the rest of the body. Thus, a small drop type of heart in the x-ray film should generally mean a poor prognosis.

#### INTESTINES

There were twenty-four patients with intestinal tuberculosis. This was the most frequent tuberculous complication found. The lesions were localized in the jejunum, ileum and colon. The part most frequently diseased was the terminal ileum. In eight cases, both large and small intestines were involved; in eleven, the small intestine alone. One patient who had been under treatment for intestinal tuberculosis for about eighteen months, showed several scarred areas as of healed ulcers. He also had a few small active ulcers. In regard to the frequency of this condition and the site of greatest involvement, it must be said that the intestines were not opened in every case, and it is possible that some ulcers may have been overlooked. This applies mostly to the large bowel, as ulcers in the small gut generally extend to the serosa and are easily seen and felt from the outside. However, the important point was that an antemortem diagnosis was made in only eleven of the twenty-four patients, forty-six per cent. Most of the others did not complain of any definite symptoms. In some of these, rather extensive ulcerations were present but, for the most part, those with the greatest pathology gave manifest clinical symptoms. We should endeavor to make a diagnosis of this serious condition whenever it exists. If this end can be attained early enough, the treatment should be beneficial to the patient. As Brown and Sampson have shown that intestinal tuberculosis will give characteristic x-ray findings with the barium meal, it is important to do this examination on all in whom there is the least suspicion of an involvement of the intestine. Earlier diagnosis, in which the use of the x-rays will help us, is the lesson which these deaths teach.

#### APPENDIX

This is an organ which is prone to give trouble in the tuberculous, as it seems very susceptible to acute inflammation which is quickly followed by rupture and peritonitis. Four of our deaths were due to appendicitis. In two, general peritonitis followed rupture. One of these was operated less than eighteen hours following the onset, but it was too late. In the other, a general peri-



tonitis developed while waiting for the acute inflammation to subside before operating. The other two patients died of intestinal obstruction caused by adhesions complicating an acute appendicitis. In one, the appendix which had ruptured, had been successfully removed more than a week. In the other, the adhesions developed around a localized appendiceal abscess. During the above period, fourteen other patients were operated upon for appendicitis. In one, there was a general peritonitis or rupture about twelve hours after onset. In four others, the appendix was gangrenous or ruptured.

In the seventy postmortems, we found three appendices which were badly inflamed and contained pus. Two others had definite gross tuberculous lesions. Four showed extensive adhesions as evidence of severe previous inflammation. In one of these, the appendix was almost completely buried in the terminal ileum. This patient's history showed a very severe attack of appendicitis which was suddenly relieved just before he passed a large amount of purulent material by rectum. The appendix had evidently ruptured into the bowel.

There were many other cases with adhesions in the appendiceal region showing the frequency of acute or chronic appendicitis. From our clinical experience an acute fulminating appendicitis is not a rare condition in phthisis. These patients should be operated on without delay as rupture seems likely to occur. While we learn to do as little surgery as possible in patients with pulmonary tuberculosis, we make an exception of the appendix and operate as soon as there are definite signs of disease.

#### KIDNEYS

There were twelve patients with gross tuberculous lesions of the kidneys at the necropsies: eight bilateral and four unilateral. Of the bilateral, six were extensive and two of moderate degree; while of the unilateral cases, one was extensive and three moderate or minimal. In nine of the twelve, the bladder showed tuberculous ulcers, and in two, the ureters were also diseased. The examination of the bladder was overlooked in one instance. As all of the other bladders examined were non-tuberculous, it is unlikely that many cases of renal tuberculosis were missed.

In two patients with tuberculosis of the kidney, this complication could be attributed as the direct cause of death, as their pulmonary disease was such as to be compatible with longer life. In one, little active pulmonary pathology was found besides a moderate size cavity in one lung. The other

was an old fibroid type. In both of these, the localization of the renal lesion had not been determined. This was due to the fact that a cystoscopic examination had not been made. The fibroid type, who suffered severely before death, had extensive unilateral renal tuberculosis as far as a close gross examination revealed. This man could have gotten marked relief and his life been prolonged by an early nephrectomy. The other case was a bilateral one, but the pathology was much greater and of undoubtedly longer duration on one side. If it is true, as many authorities hold, that renal tuberculosis is primarily a unilateral disease, this man too, might have been diagnosed in time and a nephrectomy might have helped him.

These two autopsies have taught the lesson that the urinary organs of all tuberculous patients should be carefully examined and a cystoscopy done whenever indicated. We are already noting the benefit from these examinations. Another reason why we are checking up more thoroughly on the renal conditions of our patients is that only eight of the eleven renal tuberculosis cases had been diagnosed before death.

#### LARYNX

There were twenty cases of tuberculosis of the larynx, which made this the second most important tuberculous complication. All had been diagnosed before death, but many of them were diagnosed only after it had become a serious complication. In at least seven, it seemed to be the most important contribution to the fatal outcome, because the pain exhausted the patient by preventing the taking of sufficient nourishment and by the loss of sleep. Attempts should be made to recognize the laryngeal involvement of our patients before it has become a menace to life. This can be done by a routine examination of the larynx of all phthisical individuals at regular intervals of, say, every two months. The early diagnosis, which is possible only in this way, followed by treatment with the electric cautery or heliotherapy and silence, should be rewarded by an arrest of the disease in many patients. Left unrecognized until far advanced, it soon becomes of greater danger to the patient than his pulmonary condition.

#### MENINGES

One of the other frequent complications was tuberculous meningitis, which, always fatal, accounted for seven of our deaths. The diagnosis was always easily made and the duration was from two to four weeks. One of these cases followed an epididymo-orchectomy, which seemed to have been a factor in precipitating the meningitis,

which occurred twelve days after the operation and was of twenty days duration. Meningitis should, therefore, be considered as a possible outcome in the operative treatment of tuberculous epididymitis and epididymo-orchitis.

#### SUMMARY

The autopsies of seventy patients dying of pulmonary tuberculosis showed that they could be divided into two classes: twenty-seven with tuberculosis of the lungs alone; forty-three with pulmonary tuberculosis complicated by tuberculosis of other organs. It was found remarkable that, of the twenty-seven with uncomplicated pulmonary tuberculosis, as many as twenty-one had some contributory cause to account for the death: viz, six, hemoptysis; six, pneumonia; four, spontaneous pneumothorax; three, cardiovascular disease; and two cases of fatal appendicitis. Of forty with extrapulmonary tuberculous lesions, the following distribution is tabulated:

Tuberculosis of intestines .....	24 or 34%
larynx .....	20 or 29%
urinary organs .....	12 or 17%
peritoneum .....	8 or 11%
meninges .....	7 or 10%
genital organs .....	7 or 10%
bones and joints .....	5 or 7%
liver .....	2 or 3%
spleen .....	1 or 1.5%
adrenals .....	1 or 1.5%
pericardium .....	1 or 1.5%

Thus, it is shown that one of the important features of this study was the great frequency of a tuberculous complication, or of an intercurrent disease, as the primary factor in the mortality. This was true in over two-thirds of the deaths, or sixty-seven per cent. Most of these have been reviewed. They teach us the importance of looking beyond the pulmonary field in all of our patients; and one of the problems we have before us in the reduction of our mortality is the proper diagnosis and treatment of complications which are extrapulmonary. We should not rest satisfied with an expert diagnosis of the pulmonary condition to the exclusion of important pathology in other organs. A special search for tuberculosis or other diseases of these other systems of the body should be carefully undertaken. In this class of patients, the alimentary, the genito-urinary, and skeletal systems are of particular significance. Individualization of our phthisical patients, with a constant lookout for possible complications, should be the rule.

#### CONCLUSIONS

1. It is realized that the number of these autopsies is too small to draw definite conclusions, yet they seem to point out some lessons which are well worth remembering.

Just as the early diagnosis of pulmonary tuberculosis is paramount for its successful treatment, so are the early diagnosis and treatment of its tuberculous complications.

2. In laryngeal tuberculosis, an early diagnosis, before it has reached the stage where it is a menace to life, is essential. Do we always make our diagnosis early or do we wait for severe complaint from the patient before examining the larynx? I believe that more frequent examinations of the larynx of every patient should be practiced. This is particularly true among our out-patients, who have less medical supervision. At any rate, this complication should be recognized early enough for heliotherapy or cauterization to be of value. Otherwise, the prognosis must be extremely bad.

3. In renal tuberculosis, a greater effort at early diagnosis should be made. Cystoscopy and the laboratory examination of the urine at the very earliest suspicion of urinary disturbances, should be the rule. If we are not competent to make a diagnosis, including the localization of the renal tuberculosis, a specialist in urology should be called in consultation to examine our suspicious cases. When a unilateral diagnosis is made, a nephrectomy should follow if the patient's condition permits.

4. In intestinal tuberculosis we are confronted with the same problem of early diagnosis. Under proper treatment with ultraviolet light, proper diet, and calcium chloride intravenously, we have seen some of our cases improve greatly. One case, under treatment over eighteen months, showed signs of healed ulcers at the post-mortem. This can occur only if treatment is begun before too much destruction has taken place. At the slightest complaint of gastro-intestinal disorder, an examination with the barium meal should be made. Following the technic outlined by Brown and Sampson of Saranac Lake, the roentgenologic examination may reveal the diagnosis before this is possible clinically. In our necropsy reports, we have seen that fifty-four per cent of the cases of tuberculosis of the intestine had not been recognized during life, indicating that many of them did not show any characteristic symptomatology. This is the reason the x-ray examination is so strongly advised.

5. We should always be on the lookout for symptoms of acute appendicitis in phthisis, in order to operate before rupture has occurred. During the last three years, at Fort Stanton, there have been an unusual number of acute fulminating cases of appendicitis among our patients. These pa-



tients should not be watched too long before operating, as we have learned by sad experience. While the policy of as little surgery as possible in pulmonary tuberculosis is a sound one, it should not be made to apply to the appendix.

6. Artificial pneumothorax in the treatment of hemoptysis is to be reserved as a last resort where the routine treatment has failed. In its use there is always the risk of pneumonia in the contralateral lung. It should, therefore, never be looked upon as a primary measure for controlling pulmonary hemorrhage.

7. Pneumothorax therapy, on the other hand, should be started as early as possible when indicated in suitable cases. To wait is to encourage the formation of pleural adhesions which may interfere with a successful result. This applies particularly to patients with cavities, as is shown in the pleural statistics of these necropsies. Adhesions were more frequent and more extensive in the cavernous lungs.

8. Annular shadows seen in the x-ray films of the chest were due to intrapulmonary cavities in all of our postmortems. None were found to originate from a pleural condition, either a localized pneumothorax or a pleural ring. The x-ray showed at least ninety-four per cent of the cavities present at the time of death, whereas, only fifty-eight per cent could be found by the physical examination. No case of pulmonary tuberculosis should be treated without an x-ray film of the chest.

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### SOME EXTRATHORACIC TUBERCULOUS LESIONS IN CHILDHOOD\*

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#### THE ABDOMEN

**Tuberculous mesenteric lymph nodes** have been detected at the postmortem table or during exploratory operations, and seen in all stages of the disease from the recent progressive lesion to the highly calcified process. Opie's postmortem work has been an

outstanding contribution to this subject. An advance in diagnosis was made by Dunham and Smythe in 1926 when they examined 120 school children, most of whom were under six years of age, many of whom gave definite history of exposure to tuberculosis, and all of whom reacted positively to tuberculin. They showed that calcified mesenteric lymph nodes could often be detected by x-ray examination. Indeed, seventeen per cent of these children manifested evidence of such conditions. Recently Soper and Dunham reported the results of their studies on 301 children from six to thirteen years old, most of whom reacted positively to tuberculin. Among the 301 children, evidence of calcified mesenteric nodes was found in sixty-four. Of the sixty-four, all but one reacted positively to tuberculin, and in twenty-nine of them definite exposure was known to have existed. In the detection of calcified lymph nodes, they made antero-posterior films in every case and lateral films in most cases. The lateral films they find "serve to confirm the anteroposterior films, to exclude the possibility of the calcium deposit being in the urinary tract through its being visible anterior to the vertebral column. An occasional lateral film reveals the calcification where it is overlooked or 'invisible' in the antero-posterior film." They use thirty milliamperes tube; fifty milliamperes; a distance of twenty-six inches; a spark gap of four inches for the antero-posterior and five inches for the lateral films. The exposure for the antero-posterior films is one-quarter of a second for a child seven years, and one-third of a second for a child of twelve years. For the lateral films the exposure is from one-quarter to three-quarters of a second. They employ an intensifying screen. Associated with the calcified mesenteric nodes they found tracheo-bronchial or lung disease, or both, in forty of the sixty-four cases. Cervical adenitis was present in three; tuberculous peritonitis in one and phlyctenular conjunctivitis in two. Recently one of the children in the group studied by Dunham and Smythe, who had evidence of calcification in the mesenteric nodes for several years, was accidentally killed. At the postmortem examination, the x-ray finding was confirmed and in addition, caseation was present.

These studies open a new field in routine examinations. The finding of evidence of calcification of the mesenteric lymph nodes may explain positive tuberculin reactions in patients in whom no other lesion can be detected. They also are an indication for treatment, as caseous nodes may rupture



into the peritoneal cavity, resulting in more extensive disease. Perhaps they open a new field in the prevention of tuberculosis, being potential dangers, as tuberculous tracheo-bronchial and hilum nodes are such from the standpoint of spreading bacilli to others.

**Tuberculosis of the intestine** is not common in childhood. When present it is usually accompanied by caseous lesions of the tracheobronchial and mesenteric lymph nodes. The intestinal lesions usually are secondary; however, primary lesions may appear among those taking huge quantities of tubercle bacilli into the digestive tract.

From infancy through the period of childhood **tuberculous peritonitis** is common during the third year of life. When the disease exists, the liver and spleen are frequently involved. In one form (ascitic) slightly cloudy or transparent fluid fills the peritoneal cavity. If intestinal adhesions develop, they are not dense enough to hold the parts together. In such cases miliary tubercles are found over the whole peritoneum. In the other form (*tabes mesenterica*) only a small amount of purulent fluid is found. The adhesions are so dense as to bind firmly the loops of intestine. Tuberculous ulcerations are usually found in the intestine.

The diagnosis of tuberculous peritonitis is sometimes aided by simultaneous occurrence of pleurisy. The symptoms often are of little avail in diagnosis since they may simulate those of so many other diseases, such as intestinal obstruction, strangulated hernia, appendicitis and typhoid fever. A markedly positive tuberculin test is of considerable value. One should always search for evidence of tuberculous lesions elsewhere in the body, such as those of the childhood type in the lungs, hilum and tracheobronchial lymph nodes and in the mesenteric nodes. A history of prolonged exposure to a tuberculous patient or the use of contaminated foods is important.

In the progressive stage of the disease, one should insist upon strict bed rest with comfortable atmospheric conditions. If intestinal lesions are absent, a general diet suffices. If they are present, the diet should be free from rough and irritating substances. In any event, cod liver oil and tomato juice should be administered after meals. The dose is to be consistent with the age of the child. That for an adult is one-half ounce of cod liver oil and three ounces of tomato juice. Heliotherapy by natural sunlight or artificial lamps is beneficial in many cases. The Rollier method for natural sunlight suffices. If alpine lamps are used, general exposures of one minute with the lamp

at a distance of thirty inches from the body once or twice per day and increasing one minute per day if no reaction develops, are very valuable. In some cases it is desirable to expose only the abdomen; in others, on general irradiation, additional exposures over the abdomen are well tolerated.

The prognosis in many cases of tuberculous peritonitis is good provided the treatment is continued sufficiently long.

Prevention consists of avoiding further exposure to tubercle bacilli and the proper treatment of all children with tuberculosis of the childhood type, the pleura and mesenteric lymph nodes.

**Tuberculosis of the kidney** usually is secondary to disease elsewhere in the body. Among definitely tuberculous children the incidence of renal involvement is fairly high. Some have placed it at twenty-three per cent. Its diagnosis is not always easy but a definitely positive cutaneous tuberculin test is of considerable importance, as well as the finding of a tuberculous process in some other part of the body. The presence of tubercle bacilli in the urine confirmed by animal inoculation, is our best evidence. Catheterization of the ureters aids in determining whether the bacilli are being discharged from one or both kidneys.

The treatment of unilateral renal tuberculosis is surgical. But this should be followed by a long course of dietetic and hygienic treatment, with the addition of heliotherapy. Without surgery, tuberculin therapy is advanced by some workers.

The immediate prognosis is good with surgery, and postmortem workers have reported that spontaneous healing by fibrosis and calcification is not uncommon.

#### THE EYE

**Conjunctivitis** is one of the common forms of tuberculosis of the eye. This may be primary or secondary. Other parts, such as the retina, choroid, sclera, the iris and even the lachrymal glands, have been found to be tuberculous. The diagnosis of all forms of ocular tuberculosis is not particularly easy. In those parts easily accessible, such as the conjunctiva and lachrymal glands, direct smears are helpful. In each form of tuberculosis of the eye, one should make careful stereoscopic films, and place particular emphasis upon the nodes receiving lymph from the eye. Many cases of ocular tuberculosis are secondary and hence the focus should be sought. It may be in the tonsils, in the lungs, or elsewhere in the body. In addition to the general examination, one should always apply the intracutaneous tuberculin test and if this is negative when the dosage

has been increased to one milligram, the suspected condition most likely is nontuberculous. If the tuberculin test is positive and the patient manifests a rather strong hypersensitiveness, one should watch the focal reaction about the suspected lesions. The treatment of tuberculosis of the eye consists of the general measures employed in treating tuberculosis in any part of the body and general heliotherapy. By the use of tuberculin, excellent results may be obtained provided there is not an extensive and progressive tuberculosis in the lungs. The initial dose should never be larger than 0.001 mg. The increase should be very gradual, at four or five days intervals, until one milligram is used as the maximum dose. In severe cases, where there is a marked hypersensitiveness to tuberculin, the initial dose should be even smaller; 0.0001 mg. will suffice and the increase of dosage should be very gradual. Most excellent results may be obtained in ocular tuberculosis by this method of treatment.

A close relationship exists between **phlyctenular conjunctivitis** and tuberculosis. In phlyctenular kerato-conjunctivitis, the etiological factor is practically always a tuberculous focus somewhere in the body and the conjunctivitis is due to hypersensitiveness to tuberculosis. As long as the high degree of hypersensitiveness continues, the conjunctivitis persists. The repeated attacks may last for months and even years. If the hypersensitiveness to tuberculin wanes, the attacks subside, but if there is a spread of the disease about the tuberculous focus already present in the body or there is a reinfection from the outside, the hypersensitiveness increases and the conjunctivitis returns.

The treatment consists of desensitizing the patient to tuberculin by subcutaneous tuberculin therapy. One should be extremely careful not to use enough tuberculin to produce a reaction either local or constitutional; 0.1 c.c. of a solution of 1:1,000,000 of old tuberculin is the initial dose. The dosage is increased very gradually every third day until 5.0 mg. (0.5 c.c. of 1:100 dilution) of old tuberculin is used. Remarkable results are obtained by this method of treatment.

#### THE SKIN

**Erythema nodosum** is rather frequently associated with tuberculosis. It usually appears while the hypersensitiveness to tuberculin is marked. Dr. Stefano reported twenty-three cases of erythema nodosum in children from three to twelve years. In every case the tuberculin skin test was pos-

itive and markedly so in fifteen. To be sure, erythema nodosum is not always caused by tuberculosis; there are numerous other causes. In fact, erythema nodosum may be seen before clinical tuberculosis has been diagnosed. This is not an uncommon occurrence during the period of childhood. Again, it may occur while a clinical case of tuberculosis is under observation and treatment. When this is true, it often indicates an extension of the disease. Therefore, when erythema nodosum appears, whether the patient is one who has always been well or one who has previously suffered from tuberculosis, careful observations should be made for a new lesion or the extension of an old one. It may be followed by enlargement of the lymph nodes, peritonitis, pleurisy with effusion, meningitis, pericarditis and arthritis due to tuberculosis. In other cases there are no sequelae. Since these conditions often occur in children, it is believed that erythema nodosum is caused by toxins of tubercle bacilli.

**Lupus vulgaris** apparently is less frequent than it was in former years. Among approximately 7,000 children examined at the Lymanhurst School for Tuberculous Children, not one case has been discovered. However, the disease does exist among children. In diagnosis it has been shown that, when the superficial granulated tissue of ulcerative lupus is injected into guinea pigs, positive results are obtained in ninety per cent of the cases. This fact is also of great value in preventive work, as it proves that the disease is infectious. Wirz has reported sixty cases in which he used various methods of treatment. His best results were obtained by surgical excision, although he points out that this is not always feasible. Second to surgical excision, he found that x-ray therapy following iodine infiltration of the skin, is good. Heliotherapy has also been found of value in the treatment of lupus. A point to be borne in mind is that, in lupus, a high degree of allergy usually does not exist.

#### CERVICAL LYMPH NODES

Because they drain the greater part of the mouth, nose, throat, eyes and ears, tuberculosis of the cervical lymph nodes at one time was an extremely common condition among children. With the decreased incidence of tuberculous disease in the human family and the campaign for pasteurization of milk, there has come a great lowering of tuberculosis of the cervical lymph nodes among children. Usually this disease becomes manifest after the age of two years. In infancy it is uncommon to find tuberculous lymph nodes sufficiently large



to arrive at a diagnosis on clinical examination. Tuberculosis of the cervical nodes may be a primary disease. Bacilli taken into the nose, mouth and throat are carried by phagocytes directly to the lymph nodes, where they find lodgment, proliferate and cause disease. Usually it is secondary to an infection which appears somewhere about the mouth, nose, throat, or eye. Many cases of primary tuberculosis of the eye, tonsils, and so forth, have been reported, and, from the primary infection, just as is true in the chest, bacilli will quickly be carried to the regional lymph nodes. When the cervical lymph nodes become involved, there often is considerable enlargement of one node with less enlargement of those adjacent to it. There is little doubt that, in many cases, where tubercle bacilli reach the lymph nodes, they are brought under control without external manifestations. When the nodes do become definitely enlarged, they may, after a time, bring the disease under control and hold it in a state of latency for months, years, or the lifetime of the individual. Again, caseation may occur and eventually there is a rupture on the surface of the skin with supuration over a long period of time. From such areas of disease, there may be no spread of tubercle bacilli so as to result in clinical disease elsewhere in the child's body but, in a fair percentage of cases, the disease appears in other parts. In nearly all cases there is spread to the hilum and tracheobronchial lymph nodes. Because of their accessibility, a diagnosis of tuberculosis of the cervical lymph nodes is not difficult. One must take into consideration the history of exposure to either human or bovine types of tubercle bacilli. Enlargements that have persisted over a period of three months or more, should have further study for tuberculosis. One must keep in mind that there are many causes of enlargements of the lymph nodes, such as carious teeth, diseased tonsils, acute upper respiratory infections, Hodgkin's disease and syphilis. Cutaneous tuberculin tests are of great importance. Some have advocated the use of subcutaneous tuberculin diagnostically,

in order to bring about focal reactions. When this is done, the initial dose should



Fig. 1. A. S. Made from roentgenogram of neck of girl with extensive exposure to tuberculosis. Two definite areas of calcification in cervical nodes on right side and one on the left side.



Fig. 2. M. E. Made from roentgenogram of the neck of girl with extensive exposure to tuberculosis and definite enlargements of the cervical nodes of both sides. Extensive calcifications are shown from the supraclavicular region and upward along each side of the neck.



never be greater than 0.5 mg. If the patient is highly allergic, a smaller amount, such as 0.1 m., will suffice for the initial dose. If no reaction of a constitutional or focal nature occurs, the dosage may be increased until a final dose of 5 mg. is given. When a focal reaction occurs, there will be an increase in the size of the lymph nodes involved. In the cervical region, as in the regions of the hilum, tracheobronchial and mesenteric nodes, the detection of calcification (Figs. 1 and 2) is excellent evidence of tuberculosis. Therefore, an x-ray examination of the cervical lymph nodes, particularly if the disease has existed for several months, may give one evidence that can not be obtained in any other manner. Biopsy may be resorted to, but it is preferable to arrive at a diagnosis without it, since surgery of the lymph nodes of the neck usually is not advisable. This procedure also is refused by many families. It should always be considered a last resort measure in diagnosis.

The general treatment consists of good diet, regulation of energy, expenditures as indicated in the individual case, and prevention of further exposure to tubercle bacilli. Heliotherapy is of value but one usually obtains better results by combining it with x-ray therapy. In extreme cases radium may be applied. Surgery usually is not necessary. However, in cases where one or more well walled-off nodes have been suppurating for a long time and have not responded to other forms of treatment, their complete removal is indicated. Again, with enlargements that have become densely fibroid or extensively calcified, which will result in permanent deformity, removal is indicated, but the old-time radical operation is almost never necessary and may even do harm.

The prognosis in cervical lymph node tuberculosis usually is good, but every case should be treated, for, otherwise, a certain percentage will later develop disease in other parts of the body, including the lungs.

When other lymph nodes, such as the axillary, cubital, and popliteal, become tuberculous, the diagnosis, treatment and prognosis are approximately the same as with cervical node involvement.

\*From the Departments of Preventive Medicine and Internal Medicine, University of Minnesota.

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## CLINICAL SYMPTOMS IN THE PROGNOSIS OF TUBERCULOSIS

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(Read before the El Paso County Medical Society)

For the past century, the trend of the medical profession has been more and more to the study of the anatomy of the human body. Students are taught to know anatomy and to diagnose and treat diseases according to the anatomic pathology found. Physicians are inclined to give more importance to form and structure than to function. They are influenced more by evidence of pathology than by clinical symptoms. Anatomy and pathology have been given far more consideration than disturbance of function, in medical discussions. The demonstration of a specimen or microscopic slide showing deviation from normal, affords much satisfaction to the demonstrator and is received by the profession enthusiastically.

However, it is a fact that changes in function produce symptoms which are the physiologic pathology present and on which we must depend largely for our diagnosis. Furthermore, the restoration of normal function is the purpose of anatomy. So much consideration has been given anatomic pathology that we are prone to forget the physiologic pathology which really means so much in the diagnosis and treatment of disease. Clinical symptoms have not been given the consideration which they deserve. Accepting anatomic pathology as our basis for the diagnosis and treatment of disease has led to the grouping of specialists according to the organ involved. Consequently, if the same organism affects the throat, heart, lungs or appendix, we have the throat specialist, heart specialist, lung specialist or surgeon, respectively. Anatomically, pneumonia is confined to the lungs. Likewise, typhoid is confined to the intestines; yet pneumonia and typhoid are both general infections. Tuberculosis is also a general infection, and its intelligent study and treatment calls for an internist who has a broad view of not only the actual anatomic involvement but also of the clinical symptoms which indicate clearly the balance that exists between a patient's disease and his resistance.

Disease converts normal anatomy into pathology, but this would not be important if it caused no disturbance of function. Experienced tuberculosis workers know that the anatomic change may be very extensive, with little change in function, and not be serious. But marked disturbance of

function, with little or much pathology, is always serious. One cannot give a dependable prognosis from the anatomic concept. No physician would offer a prognosis based entirely on the anatomic pathology found. But the clinical symptoms representing the physiologic pathology or the patient's reaction to his disease, mean much toward a prognosis. Of course, a broader concept is obtained by a combination of both the anatomic and physiologic concept. Following the general trend to accept form and structure as being more important than disturbance of function, the classification of tuberculosis is based on the anatomic involvement, which is not nearly so important as the clinical symptoms.

Turban's classification of tuberculosis into three stages is the basis of all adopted classifications. It is based on the amount of involvement. It was his opinion (as stated by himself in discussing his classification before the International Tuberculosis Conference in Berlin, in 1908) that no other factor played such important part in the prognosis of tuberculosis as the extent or spread of the disease. The Turban Gerhardt classification adopted by the International Conference at Vienna in 1907, follows the same anatomic scheme suggested by Turban, but lessens the amount of involvement for the various stages.

Our National Tuberculosis Association followed the dominant anatomic basis but added a physiologic concept by requiring the consideration of the patient's symptoms in determining his status. This was real progress. But even in this classification, the anatomic entirely overshadows the physiological concept. The American Sanatorium Association, in 1916, adopted a classification further amplifying the importance of symptoms and permitting three classifications according to symptoms under each anatomic division, offering the following combination:

Incipient A, B, & C,

Moderately advanced A, B, & C,

For Advanced A, B, & C.

Turban offered his classification as a means of arriving at uniformity so as to enable physicians properly to arrive at more or less definite and dependable conclusions as to the results of treatment. He believed that involvement was the most important factor in the prognosis. He aimed at uniformity. But, in order to have uniformity, all examiners would have to examine with equal ability and equal care and would have to use equal judgment in interpretation. Such is not the case. Without

the aid of the x-ray, the findings of different physicians in any case of tuberculosis vary considerably and even with aid of the x-ray, there is often a wide difference of opinion. The attempt at such a classification, however, has helped materially. It has demonstrated that the cases with lesser involvement without marked physiologic disturbance, are the more favorable cases for treatment. But it has further demonstrated, to more careful observers, that anatomic involvement, without consideration of symptoms, is a very poor basis for a prognosis. The physician attempting to follow these classifications is apt to have impressed on his mind that the extent of the lesion is the greatest factor and that the seriousness of the case can be mechanically measured. It causes him to concentrate on the extent of the disease instead of on the condition of the patient.

While the classifications used in America today are a combination of the extent and character of the lesion, on the anatomic side, and the clinical symptoms of the patient, on the physiologic side, nevertheless, the anatomic side remains uppermost in the minds of most observers. They attempt to assign mechanical exactness to processes which are by nature most inexact. While uniformity is the aim of all classifications, it is impossible in actual practice.

Strains of tubercle bacilli are of different virulence and patients have different resistance; therefore, it naturally follows that the balance existing between the disease and patient must differ. Likewise, the ability and methods of examiners differ. Many factors on the part of the patient must be considered, such as race, age, constitution and economic status. These and many other factors (all) differ in each patient. These variations make uniformity in disease unobtainable. The use of the x-ray has helped materially in determining the extent of the disease. But even the x-ray is not by any means definite, since the human element must enter into the technic of taking pictures and even more into the interpretation of the same. As the x-ray often reveals the inability of the internist to determine the character and extent of disease in the lungs, likewise the autopsy often exposes the faulty interpretation of x-ray pictures.

I should like to ask if anyone can arrive at mathematical exactness as to the involvement in a given lung by the aid of both physical examination and x-ray finding? Furthermore, if all the varying factors could be eliminated and a definite amount of anatomic involvement could be established, would



this give us a prognosis? After all, the ultimate reason for classification is to be able to determine the probable result in a given patient.

The divisions of first, second and third stage, or of minimal, moderately advanced and advanced, are purely arbitrary. They in no way tell us what is taking place. It is far better to have a whole lobe involved with the non-virulent fibroid type of tuberculosis than to have a small spot one inch in diameter necrosing. The first type of lesion shows that the fighting balance is on the side of the patient. Furthermore, a patient who withstands an extensive active lesion well has a far better chance to get well than one who withstands a small active lesion poorly. What patient and physician want to know, is not how much lung is involved, but how is the individual patient reacting to the disease that he has, and is he able to overcome it? Is the balance in favor of the patient or is it in favor of the disease? Are the normal smooth working cells of the body tissues disturbed and if so, to what extent? What is his physiologic as well as his anatomic response toward his tuberculosis? While we cannot and should not fail to consider the anatomic involvement, our chief consideration should be the amount of deviation from the normal physiological working of the body cells which has taken place. The relatively greater importance of the physiologic conception, as compared with the anatomic, is illustrated daily in our clinical experience. While, all else being equal, the greater the involvement the more serious the disease; yet, the extent of the lesion alone is but a minor point in destroying the patient. Furthermore, at best, it cannot be even approximately measured. The amount of disturbance to the normal working equilibrium of the body cells is the chief factor in prognosis—the physiologic rather than the anatomic deviation from normal. Disturbance of function is what brings the patient to the physician, and it is largely on this that the physician must base his diagnosis as well as his prognosis. The ultimate purpose of the physician and the ultimate hope of the patient is the restoration of normal function.

The physiologic pathology is more easily measured because it is expressed in symptoms.

One patient, after suffering a progressive necrosis destroying a large part of one or both lungs, is able to regain a fair degree of health because his physiologic equilibrium is well preserved in spite of the extensive involvement. On the other hand, we sometimes see a small necrosing spot so disturb

the physiologic balance of a patient and so depress his reacting power that the process spreads and becomes a menacing disease. We also sometimes see what seems to be a very slight anatomic lesion, accompanied by mild symptoms, and yet healed with the greatest difficulty. Such a case, in my opinion, is of mild virulence but fails to heal with usual rapidity because of the disturbance to the patient's physiologic balance.

In considering the relative value of symptoms one must consider their permanency and their effect on the recuperative power of the patient, as well as their cause. A temperature of 101, continuously, or at frequent and repeated intervals, is much more serious than one of only a few days' duration. It is also more serious if the patient is resting than if he is exercising. It is also more serious in a happy, optimistic patient than if maintained by worry. The rate of the pulse is also more important with the patient on complete rest over a long period of time and if taken carefully, eliminating the effects of exercise, excitement, worry, etc. Loss of weight is serious only when the cause cannot be corrected. Cough, expectoration and the number of bacilli are important only when considered over a long period of time. The same patient, studied when a small spot is necrosing, may raise much more, and examination of the sputum may show a great increase in the number of tubercle bacilli, and yet, in a few weeks the activity in the process may quiet down and the patient may be relatively free of cough and expectoration.

An analysis of all the symptoms of tuberculosis would show that the toxic symptoms are the ones which disturb the physiologic balance of the patient most. Certainly, the cause of death in tuberculosis is not due to the inability of the lungs to furnish oxygen. The cause of death seems to be a disturbance of the physiologic process to such an extent that the cells cannot continue to function in such a way as to keep the body in a state compatible with life.

The symptoms may be divided into three divisions: (1) reflex symptoms, (2) symptoms due to the process (*per se*) (3) toxic symptoms. Reflex symptoms are hoarseness, cough, digestive disturbances, (hypermotility and hypersecretion) circulatory disturbances, chest and shoulder pains and flushing of face. Symptoms due to the process *per se* are spitting of blood, sputum, frequent and protracted cold (tuberculous bronchitis) and pleurisy (tuberculous pleuritis). Toxic symptoms are malaise, fatigue, weakness, nervousness (digestive disturbance), increased



metabolic rate, loss of weight, increased pulse rate, night sweats and fever.

With this grouping, one can readily see that the reflex symptoms and those due to the disease process *per se* are not the ones which cause the serious changes in the body. It is the toxic group, or clinical symptoms, which really endanger life. The toxins of tuberculosis cause a more or less harmful stimulation of the nerve cells, producing a general nerve instability or nervousness. They also disturb the endocrine system, causing a loss of the chemical control of the body, with an increased acid condition of the tissues and with a diminution of the free water of the body, which interferes with the normal chemical activity of the body that should take place, and without which the body cannot be kept in a state of health.

Consequently, the prognosis in tuberculosis is individual. It does not depend on the extent or severity of the disease, but upon the manner in which the patient is able to preserve his physiologic equilibrium in spite of the extent and severity of the disease. Two patients may be suffering from tuberculosis of similar extent and intensity, as far as we are able to determine; and yet, one may sleep well, eat well, gain weight, and gradually lose his temperature, while the other sleeps poorly, is troubled with indigestion, loses weight and gradually grows worse. What is the difference? It is not the disease, but the manner in which the two patients react toward the disease. It is not the anatomic extent or the intensity of the involved area in the lung that makes the difference, but the difference in the individual physiologic equilibrium of the two patients.

The serious symptoms are always the toxic ones and are associated with clinical activity. Regardless of what symptoms may be most prominent, any patient who, for any great length of time, shows unfavorable reaction to the toxins, must be classed as unfavorable. In other words any patient with an increase of clinical symptoms after a prolonged period of bed rest, offers a serious prognosis.

The clinical symptoms, finally, are the key to the prognosis. The classification of tuberculosis into its anatomic stages has its place, but it is of minor importance as compared with the clinical symptoms.

The anatomic concept leads to a mechanical attitude toward the disease and leads away from the personal element, which is the more important factor of the disease. On the other hand, the physiologic concept leads

to the personal element and encourages the study of each patient as a reacting organism. While a combination of both the anatomic and the physiologic concept is necessary to a clear, definite understanding of any case of tuberculosis, nevertheless, the prognosis depends chiefly, if not entirely, on the physiologic reaction of the patient, regardless of the extent or intensity of the disease.

### CHRONIC MASTOIDITIS COMPLICATED BY RIGHT LATERAL SINUS AND JUGULAR BULB THROMBOSIS, MENINGITIS, AND BRAIN ABSCESS

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Phoenix, Ariz.

(Case report before the monthly staff meeting of St Joseph's Hospital at Phoenix, Oct 8, 1929)

L. T., male, age 55, was admitted to St. Joseph's Hospital, August 8, 1929, referred by Dr. Christensen of Miami, Ariz., with diagnosis of probable sinus thrombosis.

Patient's present illness had begun ten days previously. Ever since boyhood, patient had frequent attacks of headache and pain in right ear, with intermittent purulent discharge. His family stated that present attack was more severe than usual and was accompanied by bloody vomitus, as well as intestinal hemorrhage. He also had severe dizzy spells before and during his present illness.

Examination:—General appearance showed a man extremely ill, mentality slightly clouded, but patient was rational. Fundi did not show any changes. Pupils reacted sluggishly to light.

Ear:—Right tympanum showed old anterior perforation. There was very slight tenderness generally distributed over the mastoid. There was a small amount of purulent discharge from middle ear which did not pulsate. There was no sagging of posterior-superior canal wall. Some pain was elicited when deep pressure was made in the region of the right internal jugular. Report on ear culture at this time showed some probable saprophytes and pneumococci.

X-ray and clinical findings showed extensive destruction of the right mastoid and a pansinusitis of same side. The spinal fluid was under slight pressure with no growth on culture. Cell count was in the neighborhood of 100. This varied, however, in the course of the disease, after five days reaching 4,000.

Temperature range on day of admission was 100 to 103½.

Dr. Raney saw the patient in consultation and made the following report.

"Heart rapid; moist rales at bases of lungs. Abdomen flaccid; not distended or indicative of any form of peritoneal irritation. Rectal examination: inspection normal; digital examination, probably a rectal polyp or small thrombosed internal hemorrhoid."

There was a distinct chill on evening of second day, followed by rapid rise of temperature to 105. A large amount of blood, partly dark but mostly fresh, was expelled by rectum. This had been preceded by abnormal distention and severe pain. A rectal polyp in this locality was not sufficient to

account for the large hemorrhage or for earlier bleeding.

The Widal was negative on the second day and was persistently negative throughout the illness. The temperature curve, especially before entering the hospital, general malaise, headache and hemorrhages, suggested a possible concomitant typhoid fever. The history of the ear condition, even in the absence of rapid pulse and positive blood culture, pointed to a diagnosis of sinus thrombosis.

He had been given a blood transfusion on the day of admission and several transfusions following operation. Transfusion was done as blood count and hemoglobin indicated. The beneficial result of blood transfusion in septic sinus thrombosis has been alluded to in one of my previous papers.

On the following morning operation was done under local anesthesia. Cortex was found to be thin. Lateral sinus was very superficial and placed far forward close to the external auditory canal. The external wall of sinus consisted of a large sloughing mass of tissue. The internal jugular was ligated above facial and below and resected. Several large degenerated and gangrenous clots were then removed from interior of sinus. Although bone over lateral sinus was removed beyond the knee there was no bleeding from above. There was partial bleeding obtained from below, but bleeding from above could not be obtained by any means whatsoever. At a later dressing, free bleeding from upper portion of sinus was obtained by inserting a catheter as far back as the torcular and applying gentle suction.

Hiccoughing, which was present from the time of admission and proved to be quite troublesome, showed some abatement following operation. For the first 24 hours after operation, there was a slight improvement in the patient's general condition. After four days there was some rigidity of neck, partial bilateral Kernig's, but no positive Babinsky. Later facial twitchings were noted in the left eye and left side of face. Temperature ranged from 101 to 103. The average pulse rate was from 100 to 120, respirations quite high, in the neighborhood of 40 and 45. There was a gram-negative bacillus isolated from the spinal fluid which, when injected into a guinea pig, was found not to be pathogenic. Direct smear was negative. However, direct culture (that is from lateral sinus) showed some staphylococci and a few streptococci.

Patient was very restless and seemed to suffer pain referred to right frontal region. There was no paralysis of limbs on either side. There was no nystagmus. Lateral sinus wound, as well as region of jugular bulb, was satisfactory. Mastoid cavity had been completely cleaned and there was but a slight amount of drainage. Pus was noted, however, coming directly from upper region of sigmoid sinus. There had also been some purulent drainage from jugular bulb, but this had diminished.

On the 16th, spinal fluid count was reduced to 112 per c. mm. Copper reduction was present with an excess of globulin. Though sparse symptoms were present, the course of the case, especially spinal fluid findings, indicated a probable brain abscess.

Exploration for brain abscess was made. Operation was done without any anesthetic on account of patient being in coma. The cerebellum was first explored on account of its contiguity to the lateral sinus. After removing temporo-sphenoidal floor and excising dura, I found the whole lobe involved by large amount of degenerated brain tis-

sue and thick pus. Bacteriological examination showed a staphylococcus. The abscess was encapsulated. Drains were placed anteriorly and posteriorly.

Following operation, patient's condition began immediately to improve. At 7 o'clock the same evening he had aroused from his coma and asked for water. His sensoria were not so cloudy and his general mentality improved even to the next morning. About three o'clock that afternoon, patient complained of a very severe and sharp pain in the lower lobe of left lung.

Examination disclosed a pneumonic process present, as well as the same condition on the right side, but not so marked. Old metastatic involvement of left lung was suspected and a diagnosis of multiple abscesses of same made. Early in the case, a metastatic involvement as the probable terminal factor was prognosticated. The case was a desperate one from the start, but indicated surgery offered the only possible hope.

This case illustrates the type of cerebral involvement, as well as systemic infection, that can result from a chronic mastoiditis. Middle ear infection of long standing, with repeated attacks of mastoid involvement, especially in the presence of cholesteatoma, should always be considered fraught with danger. This mastoid was, for a long period, the seat of a chronic suppuration which resulted in the destruction of its cellular elements. There were no structures remaining between the sinus and middle ear spaces. The right sinus plate was eroded, which gave sufficient evidence of the severely destructive power of the pathological process known as cholesteatoma.

The temporo-sphenoidal lobe abscess, as found in this case, is not at all an infrequent complication of a chronic neglected mastoiditis. Part of the systemic infection in this case expressed itself in metastatic abscesses of the lungs. Autopsy showed that these were numerous and of long standing and could be looked upon as the cause of the pneumonia, which, together with the general systemic infection, resulted in patient's death.

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Antiustio.—The Council on Pharmacy and Chemistry reports that Antiustio is claimed by the manufacturer, Frederick Laboratory, Toledo, Ohio, to be "The Greatest Burn Remedy in Existence." A circular contains the following indefinite and non-quantitative statement of composition: "FORMULA Solvent Solution of Plumbic MATERIALS Subnitrate of Bismuth Zinc Sulphate and Iodide of Lead combined with mineral waxes." From this and other statements it would appear that Antiustio is a petroleum-paraffin mixture claimed to contain 5 per cent of bismuth subnitrate along with small but undeclared amounts of zinc sulphate and lead iodide. The Council found Antiustio unacceptable for New and Nonofficial Remedies because it is an unscientific preparation marketed with an inadequate statement of composition, under a name which is not descriptive of its composition and with claims that are exaggerated and unwarranted. (JOUR. A.M.A., November 16, 1929, p. 1559).



## CASE OF DYSPNEA, CHEST PAIN AND SWELLING OF LEGS

(Case 15102, Case Records of Massachusetts General Hospital, from New Eng. Jour. of Med., March 7, 1929, p. 500.)

### Case History.

An American iron moulder sixty-nine years old entered April 14 complaining of shortness of breath and swelling of the legs.

For fifty years he had had attacks of nocturnal dyspnea, at first associated with "severe colds in the chest" but for years coming without known cause, waking him up feeling suffocated and puffing as though under great exertion. The attacks lasted from half an hour to five hours. Five years before admission the shortness of breath came on insidiously, at first associated with exertion, then becoming progressively worse until even walking brought it on. For four years he had urinated twice at night. Two years before admission at the end of a day's work he became dizzy and short of breath, had some dull precordial pain and was unconscious for half an hour. Then he recovered without treatment and went home unassisted. Since that time he had not worked. He had felt similar attacks coming on, but rest seemed to prevent their developing. For four months his chronic cough had been more frequent and precipitated by exertion.

His father died of gastric cancer.

Since he was nineteen the patient had had "bronchitis"—productive cough except for about three months each year usually in summer. At twenty-five he had Neisser infection. Since the fainting episode two years before admission his memory had been steadily failing. Two years before admission his weight was 235 pounds, six months ago 223 pounds. He had been losing weight for the past year.

Clinical examination showed an obese, cyanotic, dyspneic, wheezing old man with dehydrated, almost icteroid skin. Teeth, old carious snags. Barrel chest. Lungs full of piping squeaks, inspiratory and expiratory rales. Apex impulse of the heart not found. Percussion measurements: left border 15 centimeters from midsternum, 7 centimeters outside the midclavicular line, right border 1.5 centimeters to the right, supracardiac dullness 6 centimeters. Action absolutely irregular. Fibrillation. A rough systolic murmur heard all over the precordia and into the neck. No diastolic heard, although on account of the rapid heart action and fibrillation the examination was not satisfactory. There was pulse deficit. Pulses not synchronous. Artery walls thickened and tortuous. Blood pressure 190/100. Liver four fingerbreadths below the costal margin, tender, edge felt. The legs showed massive pitting edema, the sacrum moderate edema.

Urine and blood not recorded. Renal function 50 per cent. Non-protein nitrogen 30 milligrams. Wassermann not recorded.

Temperature 98.6° to 103.5° rectal. pulse 80 to 108, respirations 55 to 35.

The patient was given the equivalent of 15 grains of digitalis intramuscularly within twelve hours after admission, but when seen during the night was having violent dyspnea and orthopnea and could not be quieted with morphia. The rate was regular.

The morning after admission the temperature rose to 103.5°. An electrocardiogram showed auriculo-ventricular dissociation, auricular rate 80, ventricular 90, irregular; left bundle branch block, varying; few more normal beats in lead I. Another elec-

trocardiogram showed idioventricular rhythm with variable intraventricular block; no evidence of auricular action; rate 50, almost regular. The patient died at the end of the electrocardiogram.

The following discussions of this case were given before the Yavapai County Medical Society at their regular meeting of October 29th:-

### DR. BAYARD SULLIVAN

The pulmonary phase of this case presents a picture that is confused or overlapping. This patient came to the hospital an obese, cyanotic, dyspneic, wheezing old man, with barrel shaped chest, piping squeaks in chest, inspiratory and expiratory rales. The history says he was an iron moulder by trade and had dyspnea and shortness of breath for fifty years. This is a fairly definite history of pneumoconiosis, chronic bronchitis, bronchial asthma, pulmonary tuberculosis (fibroid type), or emphysema. We believe these symptoms more definitely describe pneumoconiosis than any of the others mentioned.

We know that pneumoconiosis is due to the inhalation of dust, hard and gritty. It is divided into several groups: anthracosis due to the inhalation of hard coal, siderosis, and silicosis or chalicosis. It is also divided into two general classes,—organic and inorganic dust, but as a rule inorganic dust plays the chief role in cases of pneumoconiosis. The dust inhaled is usually of silica content and the greatest damage is due to sharp edges and cutting.

The authorities I have read on pneumoconiosis are Kober and Hanson on Occupational Diseases, Mock on Industrial Diseases and a chapter in Tice Practice of Medicine.

The pathology of pneumoconiosis is chiefly that of fibrosis of the lungs. The dust inhaled is carried to the alveoli of the lungs and, through the phagocytes of the body, nature attempts to overcome the foreign matter. A serous discharge deposits and fills up the alveoli of the lungs and fibroses there. Fibroblasts of endothelial cells may be thrown out.

The chief symptom of pneumoconiosis is shortness of breath. Some patients may have a large amount of pneumoconiosis and few symptoms, and others a small amount and many symptoms. This dyspnea is, of course, due to the obstruction of alveoli of the lungs. In some cases there may be fibrotic pleurisy with spitting of blood.

Chronic bronchitis is one of the earliest phases of pneumoconiosis. In this case the history gives bronchitis at the age of nineteen.

We have no x-ray report and x-ray is one of the chief diagnostic helps, showing the mottled lungs. Fibrous mottling is distributed rather generally.

In bronchiectasis the chief symptom is the amount of sputum. In this case the history mentions only a productive cough.

One of the effects of pneumoconiosis is the strain on the right heart. Usually the right heart has an extra load to put the blood through the lungs and finally fails.

The five things mentioned must all be considered, —chronic bronchitis, chronic bronchial asthma, bronchiectasis, tuberculosis and emphysema, as well as pneumoconiosis. The terminal condition we believe is hypostatic pneumonia and passive congestion.

### DR. B. L. JONES

We have the case of a man sixty-nine years old who worked up to the age of sixty-seven, practically



to the end of his life. He has broken down completely in the past two years, and has a history of dyspnea for the past fifty years. There are eighty uncommon causes of dyspnea and about twenty common causes.

This man had marked edema of the legs and of the sacrum; had evidence of enlarged heart by percussion, and evidence of myocardial disease according to the electrocardiogram. According to clinical examination he had an irregular heart; the history says he had fibrillation. So we have the end picture of a man with congestive heart failure. He had at that time arteriosclerosis, clinical examination showing tortuous arteries. He had dyspnea over many years, which we believe is due to pneumoconiosis, and finally also cardiac failure.

This man had a breakdown two years ago, with sudden loss of consciousness, some dyspnea, dizziness, shortness of breath and dull precordial pain. What happened at that time? We must consider the great types of heart disease; rheumatic heart disease syphilitic heart disease, arteriosclerotic heart disease, coronary disease, and after that congenital heart disease. We can eliminate rheumatic heart disease because there is nothing in the history to point to it. We can eliminate syphilitic heart disease because there is nothing in the history or clinical examination to point to it, further than that this heart block they speak of could be caused by gumma involving the conductive system of the heart; but we do not believe that gumma is the cause in this case. Hypertensive heart disease with arteriosclerosis, general, and possibly coronary disease with thrombosis and infarction are less easily eliminated. Either could have caused the attack of two years ago, with rupture of a vessel of the brain, giving short loss of consciousness and recovery. But we do not believe death was caused by rupture of a cerebral artery.

The history states this man had marked dyspnea at night. Paroxysmal dyspnea may be due to a non cardiac conditions or due to cardiac. In the non cardiac we think of acidosis. Myocardial infarction may occur in the absence of any pain but with sudden onset of urgent dyspnea.

There are two conditions which may occur in advanced heart disease:- cardiac asthma and acute pulmonary edema. Many physicians do not take very seriously the question of cardiac asthma, but there is a definite type which does occur in advanced heart disease. It comes on when a laboring left ventricle tries to meet the demand put upon it, and tries to supply the necessary oxygen to the respiratory centre. At the same time that the respiratory centre is calling for more oxygen, the peripheral circulation begins to contract to force the blood into the organs that call for more oxygen to the respiratory centre. Secondly, we have acute pulmonary edema, with which you are all acquainted.

We know that there was definitely heart-block in this case, which was determined by the electrocardiogram. Heart-block, involving the conductive system of the heart, may be caused by congenital difficulties, toxic or inflammatory conditions, severe anemia, acute rheumatism, syphilis, subacute septic endocarditis, vascular lesions with infarct of the myocardium, and, in old people, obliterative processes in the arterioles. The last mentioned is a common cause in old people and we believe it occurred in this case. Rarely, we may have tumor of the neck causing depression of the conductivity of the bundle of His, due to pressure on the vagus. Also drugs such as the digitalis group depress the conductivity of the bundle of His.

There is only percussion in this case to determine the size of the heart. That is an extremely large

area of dullness and makes one think of pericardial effusion. We have not gone so far as to make a diagnosis of pericarditis in this case, but it could very easily occur in a man so edematous.

We believe there is arteriosclerotic heart disease, emphysema with pneumoconiosis which has gone on for years. What caused death? There are two probable causes, cardiac infarction with rupture of the heart, or fibrillation of the ventricles. So we have as our diagnosis: Pneumoconiosis; hypertensive heart disease; arteriosclerosis, general; congestive heart failure; emphysema pulmonary and probable cardiac infarction causing death.

The following discussions of this case were given before the Clinical Club of Phoenix, at their regular weekly meeting of Nov. 18th.

#### DR. FRED G. HOLMES

This is evidently a case with rather long standing heart disease gradually failing, with hypertension, arteriosclerosis, passive congestion, the terminal factor probably being a bronchopneumonia.

Evidently his nocturnal dyspnea attacks were associated with the so-called bronchitis attacks as they started at the same time. This bronchitis was most likely a bronchiectasis with a productive cough lasting fifty years. However, the nocturnal dyspnea attacks in later years took on the characteristic symptoms of a failing left heart which later began to show symptoms during the day with shortness of breath on exertion. During this time there was probably an advancing arteriosclerosis with consequent kidney damage, hypertension and loss of mental acumen.

Two years before admission, after exertion he had what was perhaps a circulatory disturbance due to his arteriosclerosis, with pain over the heart, dizziness and unconsciousness. There may have been a slight coronary occlusion.

The terminal picture is that of a hypertrophied and dilated heart, an enlarged aorta probably with atheromatous patches and sclerosed coronary arteries and a generalized arteriosclerosis of the peripheral arteries, brain, kidney, etc. Emphysema and bronchopneumonia. If a bronchopneumonia did not exist, it is possible that he had a terminal pericarditis.

The electrocardiogram shows a profound disturbance in the conduction system of the heart, there being not only a complete block in the bundle of His but also a left bundle branch block and variable intraventricular block. This was probably due to the arteriosclerosis.

There is apparently no definite evidence whether an endocarditis existed or not.

#### Diagnosis:

- Hypertrophy and dilation of the heart.
- Arteriosclerosis.
- Hypertension.
- Passive congestion.
- Emphysema.
- Bronchiectasis.

#### DR. VICTOR RANDOLPH

Nocturnal dyspnea associated with severe "colds" in the chest, and later without any such "colds," lasting over a period of fifty years predicates bronchiectasis. This would occur as a result of continued "colds" and asthmatic attacks even if it were not the cause of it, so we know that this patient has chronic bronchiectasis. The attacks during the past five years make one think of cardiac failure in addition. The fainting episode two years ago must have had cardiac cause. Physical examination confirms the findings thus far and adds the diagnosis

of auricular fibrillation. There is also arteriosclerosis both general and renal. The electrocardiogram would indicate diffuse lesions in the myocardium were it not taken so shortly before death. Diagnosis: Bronchiectasis, arteriosclerosis, cardiac failure, hypertension.

The following discussions of this case were given at the Clinico-Pathological Conference at the Massachusetts General Hospital:-

#### DR. RICHARD C. CABOT

Taking the facts stated in the opening sentence and no more, you make a guess that that is the arteriosclerotic hypertensive type of heart disease.

The first sentence in the history of the present illness sounds like asthma.

At the end of the past history I still have the same impression that I had in the beginning.

#### NOTES ON THE PHYSICAL EXAMINATION

"Almost icteroid skin." I think the examination ought to result in a little more definite a statement than that. Did the patient have any jaundice post mortem?

Dr. Tracy B. Mallory: No.

Dr. Cabot: The physical examination runs perfectly to type so far.

The urine and blood are not recorded, presumably because he died so quickly.

The non-protein nitrogen is 30 milligrams; so far as that goes we have no good reason to suspect the kidney.

The heart rate was regular, so it seems as if the digitalis had taken hold.

The patient died during the electrocardiographic examination, which shows that examination is not always the best thing for people even when it is good for the diagnosis.

#### DIFFERENTIAL DIAGNOSIS

I do not see anything essentially different to say from what we started with. He has heart disease, presumably of the hypertensive arteriosclerotic type. He has also had angina for a long time. We have nothing to refer us to any other organ. The question remains, did he have a fibrous myocarditis? I think it is probable, though I do not think there is anything in the electrocardiogram that would absolutely prove it. In a person with such lesions as he has at his age myocarditis is probable. So I think Dr. Mallory will tell us he has hypertrophy and dilatation without valve lesion and general passive congestion of all the organs, arteriosclerosis probably, and that is all.

A Student: Are those peculiar rhythms always a sign of myocardial failure? Don't you make the diagnosis of myocarditis on the basis of peculiar rhythm?

Dr. Cabot: No. I think we ought to make a distinction between myocardial failure and myocarditis, which ought to mean a fibrous process as a result of old infection. Such electrocardiographic changes suggest but do not prove myocarditis.

Don't you find some changes in the heart muscles to account for the disturbed rhythm?

Dr. Mallory: Undoubtedly the conduction processes can be disturbed without any discoverable anatomic basis.

#### CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Hypertensive and arteriosclerotic heart disease, with congestive failure.

Auricular fibrillation.

Bronchopneumonia.

#### DR. RICHARD C. CABOT'S DIAGNOSIS

Hypertensive and arteriosclerotic heart disease. Hypertrophy and dilatation.

Arteriosclerosis.

Possibly fibrous myocarditis.

Chronic passive congestion, general.

#### DR. TRACY B. MALLORY

##### ANATOMIC DIAGNOSES

1. Primary disease.  
(Hypertensive heart disease.)  
Hypertrophy and dilatation of the heart.  
Arteriosclerosis.
2. Secondary or terminal lesions.  
Emphysema.  
Anthraxis.  
Chronic passive congestion, general.
3. Historical landmark.  
Cholelithiasis.

Necropsy showed two important lesions which are undoubtedly directly connected with his death. One was emphysema of the lungs, which incidentally also showed unusually marked anthracosis, and the other was cardiac hypertrophy with dilatation of the cavities. The heart weighed over 600 grams and showed marked hypertrophy of both ventricles. The right ventricle wall measured 10 millimeters, an increase over normal of almost 300 per cent, and the left measured 25 millimeters, approximately twice normal. There was a moderate degree only of chronic passive congestion shown in the liver and spleen. This fits fairly well with the great hypertrophy of the right heart, suggesting that emphysema had much to do with his condition, since it is well known that passive congestion of the liver is not the rule in emphysema. We must, however, also assume a hypertension in view of the hypertrophy of the left heart and the hyaline sclerosis of small arteries found in the kidneys. These did not, however, show anything which could fairly be described as a genuine vascular nephritis. Microscopic examination of the heart failed to show any increase in fibrous tissue.

An incidental finding was a small and greatly scarred gall-bladder containing faceted stones.

#### NOTE BY DR. CABOT

The case should be remembered as proof that extensive disturbances of conduction—as shown by the electrocardiogram—may exist without discoverable myocarditis, macroscopic or microscopic.

## CASE OF DYSPNEA, WEAKNESS AND EDEMA.

(Case 14431, Case Records of Massachusetts General Hospital, from New Eng. Jour. of Med., Dec. 13, 1928, p. 1217).

#### Case History.

**First Admission.** A German-American salesman sixty years old entered January 24 complaining of dyspnea, weakness and edema.

His illness had come on during five years of unsuccessful business and increasing worry. For a year he had not felt well. He had however had no definite symptoms until late in the last September. Then he had severe and rapidly increasing dyspnea, which became incapacitating. From October 1 to January 22 he was in a Christian Science sanatorium, where he never had medication or complete rest in bed. After the first week he was confined to his room until shortly before he left. Early in October he was seized with dropsy, which became very severe. He had orthopnea, and occasionally urinated once at night. In the latter part of De-



ember and in January the edema became less. He had been hoarse for some time and occasionally had sputum. January 23, the day after his discharge, he was suddenly seized in the night with respiratory distress, weakness and a vague thoracic discomfort bordering on pain. The morning of damission he thought his sputum contained blood.

His father died of Bright's disease.

The patient had been subject all his life to nose-bleeds, occurring every day for five to ten days at intervals of two to five years. The last attack was three months before admission. In his youth he had asevere headaches. His only serious illness was a left renal or ureteral stone. At twenty-five he had a fairly severe attack of breathlessness after shoveling snow. In the past ten years he had three or four attacks of palpitation following severe exertion. Recently he had some left tinnitus. He denied venereal disease but not exposure.

Clinical examination showed a fairly well nourished man lying propped up in bed, restless and breathing rapidly. The subcutaneous tissues from the waist down showed brawny edema. Pyorrhea. Tongue dry. Tonsils very large. Pharynx injected. Barrel chest, with apparently limited expansion. Apex impulse of the heart not seen or felt. Left border of dullness 9.5 centimeters to the left of mid-sternum, half a centimeter outside the mid-clavicular line. Right border 3.5 centimeters. supracardiac dullness 6 centimeters. Action regular, rate 90. Heart sounds heard very well in the axilla. No second sound at the apex. Aortic second sound barely heard. A harsh musical systolic murmur heard everywhere. The murmur and the sounds in the pulmonic area seemed disassociated. Radials and branchials hard, branchials very tortuous. Blood pressure 155/100 to 170/90. Electrocardiogram: normal rythm, rate 75, change in pacemaker in Lead II, varying shape of P wave. Lungs: coarse crepitant rales in left axilla, medium crepitant rales in lower right back to the level of fourth rib; in left lower back to sixth rib dullness to flatness, diminished tactile fremitus, breath sounds, whispered and spoken voice, coarse crepitant rales. No egophony. Examination of abdomen obscured by subcutaneous edema and voluntary spasm. Dullness below right costal margin. Scrotum and penis showed edema, the scrotum a large crusted ulceration due to irritation. Very hard edema of legs and ankles; skin red, warm and scaling. Hyperesthesia of soles of feet. Motion of knees limited. Pupils somewhat small (morphia?), reacted only slightly to distance, not at all to light. Knee-jerks and ankle jerks normal. Arteries of both fundi slightly tortuous.

Urine: amount normal except 75 to 85 ounces January 17 and 28, specific gravity 1.008 to 1.024, a trace to a slight trace of albumin at two of five examinations, rare leukocytes at two, rare red cells at one. Renal function 15 to 25 percent. Blood: 19,400 to 10,800 leukocytes, 71 per cent polymorphonuclears, hemoglobin 90 to 75 per cent, reds 4,700,000 to 5,304,000, anisocytosis with a tendency to macrocytosis and occasional basophilia and tailed forms, platelets slightly reduced. One Wassermann moderately positive, one negative. Hinton negative. Non-protein nitrogen 39.

Temperature 100° by rectum to 97° by mouth. Pulse 100 to 68, with a deficit of 2 to 7 beats January 27 to 30. Respirations normal.

By x-ray the heart shadow appeared large and was prominent both to the right and the left. The aorta was prominent in the region of the knob. Both lung fields were less radiant than normal, especially at the bases. The outline of the left diaphragm was obliterated in part, perhaps by the heart shadow

and motion. The larger lung markings were particularly prominent.

January 25 the systolic murmur was loud, squeaking, transmitted to the axilla. There was a questionable systolic, also squeaking and at the same pitch, over the tricuspid area. Next day there was effusion at the left base. During the next few days he did very well, lost 20 pounds, and by January 29 had no edema of the legs, abdominal wall or scrotum. February 1 he suddenly became irrational. The next day he was mentally clear again, and after this felt well except for occasional back pain. When he sat up long he felt tired and dyspneic. His urine seemed a little warmer than usual. February 7 there was dullness with bronchial breathing and increased spoken and whispered voice at both apices, marked over the right posteriorly; egophony was questionable here, positive on the left.

February 8 he was discharged improved.

History of Interval: On leaving the hospital he stayed for three weeks in convalescent homes and a hospital, and kept fairly quiet. Then he went home, and from that time did a good deal of walking and stair climbing. He used two pillows at night. Toward the end of March he began to have swelling of the legs and dyspnea, sitting up most of the night. These symptoms grew progressively worse. About the middle of April his abdomen began to swell, and perhaps a week later his penis and scrotum, interfering with the passage of urine and causing pain on starting the stream. For two weeks he had been in bed. His physician increased digitalis to two grains a day and three grains every other day and gave him a tenth of a grain of morphia with atropin at night. For a week his condition had been about the same.

Second Admission: April 28, eleven weeks after his discharge.

Clinical examination was as before except as noted. He had marked Cheyne-Stokes respiration with gasping hyperpneic phase. His lips were somewhat cyanotic. The skin was dry, inelastic; over the legs tense and thickened, somewhat scaling. There were coarse moist rales at the base of the right lung and possible fluid at the left base,—dullness with absent breath sounds and fremitus. The cardiac impulse was strong. The apex was seen and felt in the fifth space. The midclavicular line is now recorded at 8.25 centimeters from mid-sternum, the left border of dullness 5.5, right border 3, supracardiac dullness 5.5. The sounds were of poor quality, the first sound obscured by a loud high pitched systolic murmur. There was a questionable systolic thrill at the apex. No diastolic murmur was heard. There was no pulse deficit. The blood pressure was 190/130. The sounds were of uniform quality. There were signs of ascites. The abdominal wall was tense, tympanitic over the center. There was tense hard edema of the entire lower legs extending up over the lumbosacral area and back. The right lower arm showed pitting edema. The rest of the examination was postponed.

Urine not recorded. Blood: 13,750 leukocytes, 84 per cent polymorphonuclears, hemoglobin 80 per cent, red count and smear normal.

Temperature 90° to 104.1°. Pulse 80 to 108. Respirations 10 to 30.

The patient was given digitalis intramuscularly and morphia 1/6 grain every three hours. Venesection was postponed because of the absence of marked cyanosis and edema of the lungs. He remained in about the same condition until early the morning after admission. Then he had tracheal rales, restlessness and increased dyspnea. Morphia was pushed and he was given scopolamin 1/200 grain. 250 cubic centimeters of blood was with-

drawn. During the venesection the blood pressure began to drop; within half an hour it fell from 200/135 to 138/88. He failed rapidly and at midday died.

The following discussions of his case were given before the Yavapai County Medical Society, at their meeting of October 29th:-

**DR. GEORGE S. McCARTY**

The picture presented in this case is of an old man of sixty years who, for at least five years previous to admission to hospital, was conscious of impending trouble, but refused to consent to proper medical treatment, rather pinning his faith to Christian Science until marked disturbance in health appeared.

The history gives a detailed account of his previous condition, increasing respiratory distress, dyspnea, dropsy, urinating at night, frequent nose bleed, occasional sputum (thought to be streaked with blood), severe headaches, and frequent palpitation which lead one to suspect a condition of the heart or kidney or both, as initial cause.

Clinical examination shows a man very restless and gasping for breath, with subcutaneous edema. There is enlargement of the heart, as shown by examination, and a harsh musical systolic murmur heard everywhere. The blood pressure is high. There is tonsillitis and pyorrhea. If we were looking for a focus of infection to account for the heart lesion, it would likely be found here. A slightly positive Wassermann and questionable venereal history suggest lues. The urine in this case indicates decreased kidney function,—there is only a trace of albumin, rare leukocytes and occasional red cells, no casts. We are inclined to think this is not a marked abnormality but rather indicates a decompensating heart.

This patient was hospitalized from January 24th to February 28th. During that time he made some improvement and was discharged as improved, whether or not of his own accord we can not determine. April 28th he was re-hospitalized. Physical examination was the same as the previous one, with the exceptions noted,—Cheyne-Stokes respiration, cyanosis more marked, moist rales in bases of lungs, dullness and fremitus,—which would lead us to believe there is fluid in the base of the lung. It is noted that he was given digitalis, morphine, scopalomin, in heroic doses without response, and finally venesection was done. The blood pressure dropped very rapidly, patient collapsed and died.

Our diagnosis is arteriosclerosis, from the fact that his brachial and radial arteries are extremely tortuous; possibility of syphilis on account of enlargement of the heart and aorta and questionable Wassermann; cardiac hypertension, which was followed by decompensation; possibly myocarditis followed by pulmonary congestion; and, terminally, broncho-pneumonia.

**DR. C. C. BENEDICT**

Looking over this history for a focus of infection, for we believe this condition may be due to absorption, the only lead given is pyorrhea. It is possible that a man in such a serious condition would not give information of what he considered some trivial infection, such as sore throat or rheumatic trouble. At any rate we can find only pyorrhea as such a focus.

It is quite evident to us that this man had a decompensating heart. The evidence points in that direction. In the first place, there was edema, which began in October (before admission in Janu-

ary); this edema began in the most pendant parts and gradually ascended; also moisture at both bases, which we take to be due to backing up and failure of right heart. There is also dyspnea and cyanosis, although shortness of breath was not particularly marked; he complained of it at times from the beginning, in fact at the age of twenty-five we are told he had dyspnea on exertion. This edema also fluctuated considerably. For instance, it is noted on first examination that the apex beat was not seen or felt, but on second examination it was both seen and felt in the fifth interspace. Also the left border of dullness at first examination was 9.5 centimeters to left of midsternum, and 10.5 at second. While there is not much value attached to percussion for cardiac dullness, neither is it of much value as a method of outlining the heart, because examination or percussion of the heart by the same examiner on two successive days may show a wider difference than shown here. As to the murmur,—at first examination it was harsh and musical and heard all over the precordium, at second examination it was called "loud" pitched. My understanding of pitch is high or low. I do not know what "loud" means. Also at that examination it was freely felt at the apex.

I want to refer to examination of a series of 318 cases by Berger in 1927, of murmurs of questionable origin. He classified murmurs under these heads; the asthenic habitus group, one group due to transverse position, one group due to displacement and distortion, and the group which proves to be organic. The value of a murmur depends much upon the position of the patient and upon the relative size of the heart as compared to the size of the individual and the shape of the chest. This man had a barrel shaped chest, and while we believe there was an organic murmur, it is possible it may have been due to the position of the heart in the chest and its capacity. The heart may have been in some suspended position, which will produce a murmur without valvular difficulty, by reason of the blood being thrown in a crooked direction. In other words, the blood stream makes a change in direction, producing a sound resembling a murmur. This may also occur in ascites. It has been noticed when the ascites disappears the murmur will also disappear.

The blood pressure on first examination was 155/110 to 170/90. It is well known that a high diastolic pressure argues for cardiac collapse and as we go on we will show the significance of this high diastolic pressure. Second examination, 170/90 pulse pressure of 80 which is very high; third 190/130 and later, just before death, 200/135, pulse pressure 65. After venesection it dropped to 138/88, which we believe is due to impending death and not necessarily to the withdrawal of 250 c.c. of blood. The diastolic pressure of 135, we believe, is very significant. Practically all authorities agree that a diastolic pressure that high means hypertension; 160 systolic or over constitutes hypertension.

While the electrocardiogram report in this case is not of particular moment, it is believed it does indicate some involvement of the myocardium in this respect, quoting from the history, "change in pacemaker in Lead II, varying shape of P wave." Lead II is taken from the right hand and right foot and variation in the P wave will be due to different things. There is a change in the P wave due to change in location of the impulse stimulus, or change in the mass of the myocardium. This unequal distribution means that the muscle is thicker in one place and thinner in another, resulting in interruption of stimulus as it travels, and through obstruction to flow of impulse, which may be due to



change in structure of the impulse transmission paths.

The pulse deficit of 2 to 7 is an indication of some involvement of the myocardium. Broadbent said that the functional capacity of the heart depends primarily upon musculature, yet the efficiency of the heart as a pump may be impaired to a great extent by disease of the valves or by disorder of rhythm. So that musculature is not necessarily the only factor concerned with irregular heart and failure. According to that, impaired function may be classified as valvular disease, myocardial disease or diseases of rhythm. Valvular disease of severity produces changes in the walls and cavities, hypertrophy of the ventricular wall and dilatation of the other cavities, in the effort made to compensate. From the degree of these changes then, you may estimate the extent of the lesion, and from the effect of exercise on the heart you may judge the efficiency of the compensation. To estimate the extent of myocardial change is more difficult. The characteristics of the cardiac muscle are contractility and tonicity and have much to do with functional integrity. Conductivity, excitability and stimulus production have more to do with disorders of rhythm and are not much concerned in our case.

Contractility is that property of heart muscle that enables a ventricle to completely empty itself within a reasonable time. A ventricle that can not empty itself loses its tonicity. Tonicity maintains the tone,—it must completely empty itself and be ready at all times to respond to stimulus, produce contraction, so that the ventricle does not become overdistended. It is the loss of this function that figures largely in cardiac failure. The main symptom of loss of contractility is pain on exertion, and when that pain on exertion is unaccompanied by ty. The measurements show this heart was characteristic valvular findings, it is angina.

In this case we find evidence of valvular difficulty. Summing up the findings then, it is our belief this man had valvular heart disease with decompensation, that he had arteriosclerosis, secondary edema, and broncho-pneumonia. It is possible too, that he had myocarditis because, taking for its face value the electrocardiograph reading, it is believed that only in diseases of the myocardium could that pulse deficit be found.

The following discussions of this case were given before the Clinical Club of Phoenix, at their regular weekly meeting:—

#### DR. J. M. GREER

The first thing of course that strikes our attention in this case is the dyspnea and edema, coming on, although rather rapidly, yet over a period of time and not following any acute condition of disease. This suggests immediately a cardio-renal condition, or disease. However if we wish to be more complete and thorough in our differentiation we should probably consider, and rule out, if possible some of the other things that may cause dyspnea and edema, such as pulmonary and hepatic conditions for example. The age of patient must be kept in mind as well as his occupation and unsuccessful business ventures, as these all predispose to cardiorenal syndrome or perhaps more properly a neuro-circulatory syndrome.

The dropsy spoken of early in October probably meant a failing compensation of the circulatory system. Orthopnea is seen in several conditions but is, of course, common in failing cardiac compensation. The hoarseness and sputum could be accounted for by passive congestion. The sudden seizure of respiratory distress, weakness and thoracic discomfort,

point toward a myocardial weakening. The blood tinged sputum is not infrequent in myocardial disease. The family history of Bright's disease is, of course, to be noted but to me means very little unless we know more about the history of the disease in the parent. The history of nose bleed may point to an inherent weakness in the arterial system. The history of palpitation means to me a cardiovascular weakness of some sort. However, we should know more of the habits of the individual to be at all sure of this. The tinnitus complained of no doubt means a degenerative process in the peripheral vessels.

With the above suggestions received from a consideration of the history we now come to the physical examination.

He is propped up in bed, respiratory difficulty, suggesting trouble primarily with heart, lungs, or kidneys. The restlessness probably points more towards the heart. The dependent edema suggests circulatory failure rather than a kidney condition. The barrel shaped chest suggests a chronic condition extending over a long or relatively long period of time. The fact that the apex impulse is not seen or felt although the edema only extends to the waist immediately suggests a heart condition either inherent in the heart itself or fluid in the pericardial sac. The increased area of dullness indicates an enlargement of the heart or fluid in the pericardium. The weak heart sounds suggest a general weakening of the heart itself and their being heard in the axilla probably means a dilatation. The varying shape of the P wave in the electrocardiogram probably means an erratic heart muscle and one that responds abnormally to the natural stimuli. Dr. Randolph may be able to enlighten us more on this point. The lung findings are consistent with a passive congestion.

The thing suggestive to me in the blood pressure, in the presence of hard radial and brachial arteries is that with a relatively normal heart muscle one would expect a much higher pressure. Therefore, this would indicate that we probably are dealing with a heart muscle that is diseased. The pupillary findings are only suggestive of a luetic etiology. The urinary findings seem to me to take our thoughts away from a renal condition and point again to a heart condition. The blood picture does not mean much to me but maybe some of you can point out something of value in it. The Wassermann of course is only suggestive. The x-ray findings again bring our thoughts back to the heart.

The improvement in the patient after January 25, was, no doubt, due to rest and perhaps treatment or management. The irrational condition on February first can be accounted for and suggests an atheromatous condition of the cerebral vessels. The tired and dyspneic condition of the patient after sitting up again suggests cardiac insufficiency. Just what the warm urine means I do not know. May be some of you can enlighten us upon that subject. The return of dyspnea and edema again after leaving the hospital after walking and climbing stairs again bring out thoughts around and suggest cardiac incompetency.

His second admission:

The Cheyene-Stokes respiration, cyanosis, edema and chest findings with cardiac dullness increased systolic murmur, strong impulse with ascites and edema indicate a heart that is trying to do its work but unable to do so. The leukocytosis as well as temperature curve may be accounted for by congestion due to circulatory failure. Death no doubt came about through circulatory failure associated with pulmonary edema and congestion.

Diagnosis: Myocarditis, passive pulmonary con-

gestion, arterial sclerosis, with degenerative changes in the liver and kidney.

DR. FRANK J. MILLOY:- Arteriosclerosis as primary factor.

DR. VICTOR RANDOLPH:- Arterio-renal disease, with cardiac hypertrophy and failure as secondary.

The following discussions of this case were given at the Clinico-Pathological Conference at the Massachusetts General Hospital:-

#### DR. RICHARD C. CABOT

It is noticeable how often histories begin as this does. It is the beginning of a larger number of cases than any other. One might say "Why do they hand out only cardiovascular cases here?" The answer is, cardiovascular renal disease is the commonest cause of death, a group as big as any other two groups. Including nephritis, cerebral hemorrhage and the various kind of heart disease it is more than twice as common as any single cause of death that we can name. So it is not surprising that it occurs so often here.

This is a perfectly straight cardiovascular history. If nothing comes out to the contrary we should say this man has some form of heart and vessel trouble, which since he is sixty years old is very probably of the hypertensive type.

His father's death from Bright's disease has some significance. We cannot always distinguish nephritis from hypertension without nephritis. Vascular disease of the kind that produces hypertension certainly runs in families. So even though this statement is about Bright's disease I think this family history has some bearing, which rarely turns out to be of any use.

We can see the marks of the questions asked as they get this history. They think a man with hypertension ought to have nosebleeds. They ask him about nosebleeds. They think he ought to have headaches. They ask him about headaches. And they get them.

"A left renal or ureteral stone." Considerable study on somebody's part is needed to make such a diagnosis, although it is of course a perfectly possible diagnosis.

A good many of us have had breathlessness after shoveling snow. I do not think that means much. "Palpitation following severe exertion" again does not mean much.

#### NOTES ON THE PHYSICAL EXAMINATION

What is the difference between brawny edema and soft edema? Brawny edema means worse and more of it. If we watch edema come, it is first soft, then the tissues get more and more stuffed with the fluid and so harder and harder. Brawny means extreme, then.

The apex impulse of the heart was not felt, presumably because of the shape of the chest. There is no evidence by percussion that the heart is enlarged. "Aortic second sound barely heard." That is very surprising, because the sort of disease we are thinking of produces a very sharp, clear aortic second.

The P wave is the important thing in this electrocardiogram. Certain variations in the P wave are very important as evidences of myocardial damage.

We have the clinical evidence of fluid in the chest as part of his general dropsy. We are not quite sure whether he had ascites or not, but probably he did.

The dullness below the right costal margin can probably be assumed to be due to the liver.

Hyperesthesia of the soles of the feet is not a symptom of anything that I know. Limited motion of the knees does not mean much at his age. Many healthy men have it.

The examination of the fundi is rather surprising. One would expect more change.

The gravity of the urine shows that he has no hypostenuria, that inability to concentrate urine which goes so often with chronic nephritis. He can concentrate. There is no good evidence I should say, of kidney disease. We can easily have a renal function as low as this with perfectly functioning kidneys. We have had such a figure here in many cases which at post mortem were found to have normal kidneys. Many books have given the normal much too high, so that I emphasize this.

I cannot see anything important in this blood examination. Unless they measured the cells I cannot attach significance to that macrocytosis. Macrocytosis generally goes with pernicious anemia, rarely goes with anything else.

The non-protein nitrogen is a little high, but not high enough to be called abnormal.

The blood and urine, I should say, are essentially normal.

This is not a good x-ray plate, presumably because the patient could not hold his breath, had to move his chest, and obviously it is not a seven-foot plate, which is the only one we can be sure of as to the size of the heart. Nevertheless I shall be greatly surprised if we do not find that the heart is enlarged. From this plate I believe it is, although our percussion does not show it. If we cannot feel the apex impulse we are never sure of the cardiac size unless we have the x-ray. Palpation and x-ray are the only reliable methods we have, percussion, as we have often seen, being quite unreliable.

No interpretation is given of the report on the lung markings, but my guess is that they said what we should say, passive congestion of the lungs from hypertrophy of the heart. Prominent lung markings come from congestion of the lungs, more blood in that part and less air; all the rest of the report is natural in such a case as this, i. e., is due to congestion.

I have long ago given up trying to identify murmurs over the tricuspid area. I do not believe any human being can do it.

He lost twenty pounds of edema, of course. "He suddenly became irrational." That sequence of events is quite common. Loss of edema in one way or another, by tapping, by purgation, by diuretics, is quite often followed by mental symptoms. We do not know the reason. We conjecture that whatever toxic products were previously in the system became concentrated by the taking out of all this edema which before that kept them diluted and so more or less harmless. One always has to bear in mind that possibility, the following of mental symptoms on the quick reduction of edema.

I can not make anything of those signs on February 7. Egophony is one of the most unreliable and useless of signs. If we know perfectly well what we have we can sometimes verify it by egophony, but if we have no idea what is the matter egophony only throws dust in our eyes. I have seen it used to distinguish between fluid and solid in the lungs, and it generally fails. I mean by egophony a particular nasal type of voice heard in a particular place in the chest, when the places around it do not give that tone. The resemblance to the voice of a goat is not striking.

The patient was in the hospital only about two weeks, the average stay, and did very well or he



would not have been allowed to go out so soon. He must have been warned against stair climbing. He must have done it contrary to advice. I cannot imagine his leaving this hospital without being warned against that. He is now getting towards orthopnea. Presumably he had been given digitalis in the hospital and had kept on taking it in small quantities.

Cheyne-Stokes is a new sign, or at least was not mentioned before. They should have looked for it and presumably did. It is important in relation to the prognosis, although it has no particular significance in diagnosis. We always fear death within a few weeks or months when we get a Cheyne-Stokes respiration.

It is ever so much easier to put down these percussion measurements after we know by x-ray that the heart is good and large.

I take it there was no alternation. When we are looking for that very bad prognostic sign, the best way is in taking the blood pressure to see whether all the sounds heard through the stethoscope have the same volume, or whether every other one is louder. I think that is what they are looking for here when they say "the sounds were of uniform quality",—that is, the sound heard with the stethoscope over the artery.

This blood examination gives the first sign of leukocytosis we have had, because the polynuclears were low before.

Did the temperature go steadily up?

Miss Painter: It was 101° at entrance, went down to 99°, and then up.

Dr. Cabot: It was up most of the time then, we will judge. Of course we are thinking of some terminal infection here, and the temperature is important in relation to that.

#### DIFFERENTIAL DIAGNOSIS

Although we have much detail about this case, it all points in one direction. It seems like a simple case. If it is not it is going to be our fault. The underlying condition, surely we must say, is heart disease. What kind of heart disease? Think of the four types of heart disease,—rheumatic, syphilitic, hypertensive, coronary. There is no evidence of coronary or of rheumatic, or of syphilitic except one Wassermann,—no good evidence. Hypertension is certain because he has that high blood pressure and because there is nothing else to cause it. Merely the finding of high blood pressure does not prove heart disease. We can have it from brain disease. But we have no evidence of brain disease. So hypertension plus the absence of evidence of any other cause for it means hypertensive heart disease. That means that the heart ought to be hypertrophied and dilated. There should be a certain amount of arteriosclerosis, passive congestion of his lungs and liver, hydrothorax and ascites.

All of that we need not discuss. The question is of terminal infection and of the possible connection of that with the musical systolic murmur which was heard the first time he was here, and with the questionable systolic thrill felt the second time he was here. Both of those things suggest acute endocarditis, acute vegetations. But they do not prove it in any way, and it is very difficult to make that diagnosis unless one has help from embolism and blood culture. We have nothing to suggest either embolism or an infarction of the blood stream, so we may guess at the existence of an acute vegetative endocarditis, but we cannot go further. As to other terminal infections, there is nothing to give us a clue. The commonest is pneumonia, and pneumonia without any signs would be the first thing to think of. The second commonest is pericarditis. Pericar-

ditis often comes without any signs. It is perfectly possible in a case like this to find terminal plastic pericarditis. Acute endocarditis is the third thing I should think of, and beyond that it is hardly possible to make a guess.

So he ought to have hypertensive heart disease with all that goes with that in the way of hypertrophy and dilatation and passive congestion. He has probably, not certainly, some terminal infection, pneumonia the first, pericarditis the second, and acute endocarditis the third possibility.

A Student: Could you say that death was caused by pulmonary edema in this case?

Dr. Cabot: No, I do not think I could. He has fluid in his chest, but there are many other factors in the case, so that one cannot put that as the cause of death. I should say his death was probably due to a combination of passive congestion (in the lungs and elsewhere) and infection, which often weakens the heart.

A Student: What are the possibilities of myocarditis?

Dr. Cabot: They are perfectly good. But we cannot make a diagnosis except on the basis of electrocardiographic evidence, which is suggestive but not conclusive here, or on evidence of cardiac infarction which ordinarily comes with fibrous myocarditis.

A Student: Don't you think that with arteriosclerosis and hypertension there would be apt to be some kidney involvement?

Dr. Cabot: I do not think there is going to be any nephritis. That line between renal arteriosclerosis and nephritis is one that pathologists do not all draw in the same place, and the same pathologist does not draw it in the same place all the time. I think this case will show arteriosclerosis in the kidneys as it will elsewhere, but not the particular changes in the smaller arteries that should go with vascular nephritis.

A Student: What other signs would you require for nephritis?

Dr. Cabot: In the first place fixed gravity of the urine, in the second place high retention products in the blood. We have not either of those, and those are the two most important things that I know.

A Student: A certain physiologist says that a person never dies of disease of the heart valves, but of myocardial failure. It is certainly true that myocardial failure means that the heart stops. How do clinicians look on that?

Dr. Cabot: I think clinicians think it is just a quibble over term. In some of the nursery rhymes one hears of dying from want of breath, and so one hears of myocardial failure in the sense of the heart's stopping. But in many cases of heart disease the myocardium is in splendid condition after death, macroscopically and microscopically, so we have no evidence of death from myocarditis. If one says he died of a tired heart, yes; many people die of tired hearts. But I do not like to put that into a list of diseases.

A Student: Is not the hypertrophied and dilated heart of hypertension called myocarditis?

Dr. Cabot: It is, but it should not be so called. Hypertension usually goes with a big, beefy heart, but often without any myocarditis. Nevertheless, it has been called myocarditis by some teachers of this school.

#### INTERPRETATION OF X-RAY

The findings suggest generalized enlargement of the heart, arteriosclerosis and chronic passive congestion.

#### CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Hypertensive and arteriosclerotic heart disease with decompensation.

## DR. RICHARD C. CABOT'S DIAGNOSIS

Primary hypertension.  
 Hypertensive heart disease.  
 Hypertrophy and dilatation of the heart.  
 Arteriosclerosis.  
 Arteriosclerosis of the kidneys.  
 Chronic passive congestion of the lungs and liver.  
 Hydrothorax.  
 Ascites.  
 Terminal infection—(1) pneumonia, (2) pericarditis or (3) vegetative endocarditis.

## DR. JOHN BRADLEY

## ANATOMIC DIAGNOSIS

1. Primary disease.  
 Arteriosclerosis (arteriolar) with arteriosclerotic nephritis.
2. Secondary or terminal lesions.  
 Hypertrophy of the heart.  
 Fibrinous pericarditis (slight).  
 Bronchopneumonia.  
 Central necrosis of the liver.  
 Chronic passive congestion.

The pathological findings serve to confirm the clinical deductions.

The immediate cause of death was the heart. It weighed 590 grams. Both ventricles were greatly hypertrophied and considerably dilated. There were atheromatous plaques on the mitral valve, but no suggestions of a rheumatic lesion, a slight degree of calcification in the aortic cusps, but nothing was found to warrant a diagnosis of any valvular lesion. The tricuspid valve was negative. The coronary arteries were capacious and the intima normal except for rare atheromatous patches. The aorta showed a relatively slight degree of sclerosis.

The other organs showed the usual changes resulting from cardiac insufficiency. The peritoneal cavity contained nearly a liter of clear straw-colored fluid, the right pleural cavity being obliterated by adhesions. The liver showed chronic passive congestion and central necrosis.

In the kidney, however, the capsules stripped with slight difficulty, leaving a finely granular surface. The tissue was of unusual firmness, and on microscopical examination the smaller blood vessels showed intimal thickening and hyalin changes in the media. There were many groups of sclerosed glomeruli with tubular atrophy. The pathologist in this case made a diagnosis of arteriosclerotic nephritis with general arteriosclerosis, hypertrophy of the heart, central necrosis of the liver, and chronic passive congestion.

Dr. Cabot's deductions as to terminal infection are well borne out. The lungs, in addition to deep congestion and edema, showed an early bronchopneumonia, and the pericardium a slight fibrinous pericarditis.

Dr. Cabot: Of course I do not for a moment doubt this to be a definite nephritis and my own diagnosis to be wrong. What I will ask you to watch for during the year is this: we shall see other cases with exactly such a urine as that, with all the other facts the same, and the kidney called normal post mortem. In other words, I do not think we are in possession at this time of any clinical type of nephritis. Sometimes we recognize it, but it often goes with cases like this when there is nothing wrong with the kidney clinically.

A Student: Why is the functional test of so little value?

Dr. Cabot: Because of so many other factors besides the kidney in it, the difficulty of circulation for instance. This is a test where we inject some-

thing subcutaneously. A block in the kidney is only one place in which it can be retained. The metabolism, the rate of infiltration through the tissues, makes all the difference. For a good while I used to think that fifteen per cent was rather dangerous until I had seen so many cases with a function as low as that or even lower with the kidney found normal. Of course I do not think we ever get anything like that in health. It is always in sick people, but not always in nephritis.

As long as the question of myocarditis was raised I have asked Dr. Bradley about it. He says there was no myocarditis.

## TRUTH ABOUT MEDICINES

## NEW AND NON-OFFICIAL REMEDIES

**Solution of Invert Sugar-Lilly.**—A solution of a mixture of dextrose and levulose, obtained by the inversion of sucrose. Solution of invert sugar-Lilly is used in the injection treatment of varicose veins. It is claimed that the use of sugar solutions such as solutions of dextrose or of invert sugar have the advantage over solutions of sodium chloride, sodium salicylate or mercuric chloride in that they do not cause severe cramps or sloughing if accidentally injected outside the veins. Solution of invert sugar-Lilly is marketed in ampules containing 5 Gm., 6 Gm., and 7.3 Gm., respectively, in 10 cc. Eli Lilly & Co., Indianapolis.

## Propaganda For Reform

**Toxogon.**—Toxogon is the therapeutically suggestive name applied by the Von Winkler Laboratories, Inc., Chicago, to a preparation proposed for the treatment of infectious diseases, particularly gonorrhea. The Council on Pharmacy and Chemistry found Toxogon unacceptable for New and Non-official Remedies because its composition was not adequately declared; because no evidence was available to indicate that the composition and uniformity of the product was controlled; because the claims advanced for it were unwarranted in the light of the available evidence; and because it is marketed under a therapeutically suggestive name. When the Council's report was submitted to the Von Winkler Laboratories, a reply was received which submitted further information but which did not permit a revision of the rejection of Toxogon. (Jour. A.M.A., November 2, 1929, p. 1383).

**Undulant Fever.**—A specific treatment of undulant fever is not yet available. The use of serums has proved disappointing. Vaccines have given more encouraging results according to recent reports from the continent. In particular, an antigen prepared from dried *Brucella abortus* has seemed efficacious in a small number of cases. In this country the use of acriflavine hydrochloride has been suggested to shorten the duration of the disease. (Jour. A.M.A., November 9, 1929, p. 1475).

**Potency of Arsphenamine.**—There is no official standard for therapeutic potency of arsphenamine preparations. According to reports of the United States Public Health Service Hygienic Laboratory, no one brand has been definitely established as superior to others when considered from the point of view of clinical efficiency. In some foreign countries, every preparation of arsphenamine and neoarsphenamine is tested on mice for therapeutic efficiency before being used. (Jour. A.M.A., November 9, 1929, p. 1495).



# Southwestern Medicine

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## BEGINNING VOLUME FOURTEEN

We feel that the accomplishments to be recorded in Volume XIV of SOUTHWESTERN MEDICINE will be notable in the medical annals of the southwest. We have every reason to expect this and wish to recall some of these reasons to the attention of our readers.

Our ability to publish a first class journal for the profession of the southwest is largely due to our affiliation with the Cooperative Medical Advertising Bureau,—a subsidiary of the American Medical Association. Affiliation with the Bureau means that no products are advertised in this journal which are not approved by the Council on Pharmacy and Chemistry; therefore, our readers can safely depend on any product which appears in our advertising pages. Institutions and commercial houses which advertise in these pages must also be operated according to the high ethical standards required by the best ideals of the medical profession. Most of the revenue which makes this journal possible comes from the advertisers secured for us by the Bureau. Loyal supporters of this journal will remember this.

During the past five years the journal has been published by the A. C. Taylor Printing Company, and the association has been very pleasant. Mr. Taylor takes a personal interest in advancing the journal, acting as Advertising Manager. During the past year, we exceeded our allowance of reading space by about fifteen pages, for which the publishers made no extra charge. They will continue to publish the journal this year.

Our editorial staff has been very loyal, and their efficiency can be measured by the amount of material from each section which appears in the journal. Dr. Orville H. Brown of Phoenix represents Arizona; Dr. Leslie M.

Smith of El Paso has represented western Texas; and Dr. L. B. Cohenour of Albuquerque has represented New Mexico.

There is an abundance of material coming to the journal, and constantly we are forced to reject papers offered us, because to our minds, they do not come within the established purpose of this journal. That purpose is to reflect the medical accomplishments and medical thought of our own constituency, or to publish those papers read before our constituent organizations. During the coming year, we expect to continue this policy, and hope that the accomplishments will be even more worth recording than they were during the past year.

## EL PASO COUNTY MEDICAL SOCIETY

The El Paso County Medical Society held their annual banquet on December 9th, at which time the following officers were elected for the year 1930:

President,—Dr. Paul Gallagher.

Vice-President,—Dr. J. W. Laws.

Secretary-Treasurer,—Dr. S. H. Newman.

Associate Editor for Southwestern Medicine,—Dr. James J. Gorman.

Librarian,—Dr. F. C. Goodwin.

Censors,—Drs. G. Werley, W. W. Waite and S. D. Swope.

Delegates to Texas State Medical Association,—Drs. W. L. Brown and T. J. McCamant; alternates, Drs. W. W. Waite and R. L. Ramey.

Delegate to American Association for the Advancement of Science,—Dr. E. C. Prentiss.

## GOOD SAMARITAN HOSPITAL (Phoenix) OCTOBER STAFF MEETING

The Medical and Surgical Staff meeting of the Good Samaritan Hospital met Monday evening, October 28, with 32 present.

The chairman of the staff, Dr. Thayer, presided. He announced that no October meeting of the Council had been held and therefore the first order of business was election of officers.

The nomination and election were both by ballot. The two receiving the highest number of votes were declared the nominees, unless one had a majority on the first ballot.

For chairman of the staff, Dr. H. P. Mills and Dr. L. H. Thayer were the nominees. The chairman, Dr. Thayer, asked that a motion be made from the floor declaring Dr. Mills unanimously elected chairman of the staff. Such a motion was made by Dr. McIntyre. It was duly seconded and carried. Dr. Mills was declared president of the staff for the ensuing year.

Dr. Brown announced that he did not wish to be a candidate for the office of secretary as his duties made it impossible for him to do justice to the office. The ballots were then cast for the office of secretary. The two nominees were Dr. S. I. Bloomhardt and Dr. O. H. Brown. Dr. Brown asked that his name be withdrawn and that a motion be made to declare Dr. Bloomhardt unanimously elected secretary. Dr. Jordan made such a motion. It was duly carried and Dr. Bloomhardt was declared elected secretary for the ensuing year.

The scientific program was then taken up. Dr. Bloomhardt, chairman of the records committee reported upon the deaths for the past month as follows:

#### CASE 6863

Cerebral hemorrhage, female, age 55. One week before admission she had general weakness, a listless condition, generalized pain, considerable nausea and vomiting of bile, with nervous twitching of her muscles; she grew progressively worse. She had had kidney trouble of many years standing. Eighteen years ago a diseased kidney was removed; she also had an intestinal operation. She lived fairly comfortable following these operations with adherence to strict diet. She was brought to the hospital in practically a moribund state, with auricular fibrillation, secondary to myocardial insufficiency. The spinal fluid cell count was 75, no T. B. nor other organisms. The urine had positive albumin, many pus cells but no casts. W.B.C. 12,500, 90 per cent polys. The blood pressure was not charted. This is a fairly good history and physical. Blood pressure should have been charted.

#### CASE 6696

Male, age not noted, with uremic coma and aneurism. Unable to obtain history as patient was in coma; consultation, but no record was made of it. The non-protein nitrogen was 50 mgm. The urine had a trace of albumin, 6-10 blood cells and many pus cells.

#### CASE 6693

Male, age not recorded, diagnosis of pulmonary tuberculosis. He had severe pulmonary hemorrhage two days before admission. Two brothers had died of pulmonary tuberculosis. His disease was of six years standing. He died the day of admission. Excellent history and physical.

#### CASE 6707

Female, age 85, with chronic nephritis and coma. The surgical treatment of chronic nephritis by decapsulation of the kidneys is a subject which is discussed recently and is interesting. It is too new to pass an opinion upon it. In a recent report from Guys Hospital, Dr. John Fawcett states that the group of cases most favorable in its employment is that in which, despite previous treatment, there is persistent edema accompanied by a large quantity of albumin and cases, commonly called parenchymatous nephritis. Even in this group, relief is all that can be expected. The terminal results, however, have often been found to be of real and lasting value to the extent of allowing the patients to resume work. Despite its disadvantages, Fawcett maintains the opinion that we are fully justified in resorting to this operation within certain limits.

In advanced cases of chronic interstitial nephritis decapsulation should not be performed, for it is not only useless, but dangerous. While Fawcett is in accord with this statement, he qualifies it to the extent of saying that any evidence of interstitial, renal, cardiac or vascular disease must not be considered as an absolute contraindication to the operation. In one of his cases, such interstitial changes were beginning, but the patient did well after the operation.

#### CASE 6642

Male, age 53 with myocarditis and chronic nephritis. Four weeks before admission, arms, legs and feet began to swell; there was no history of other illness.

Autopsy revealed anasarca, two quarts of fluid in the abdominal cavity, free fluid in pleural cavities, atrophy of liver, infarct of right lower lung, heart hypertrophied and diffuse parenchymatous nephritis.

#### CASE 6737

Male, age 50, with appendicitis and streptococcal septicemia. He gave history of generalized pain over abdomen. He has been troubled for considerable time with indigestion and constipation, for which, during the past three months, he has been living on oranges, eating as high as two dozen per day. Very brief physical.

Operation the day after admission revealed abscessed retrocecal appendix. This was removed. Abscess was in meso-appendix; this was opened and drained. Temperature receded gradually from 103 to 99. It then started to run septic on the fourth day; this was accompanied by chills on the 4th, 5th, 6th postoperative days. Leucocytes mounted daily with increased percentage of polys. There was no tenderness in abdomen pointing to localization. The blood culture was negative. Widal and malta tests and x-ray of the chest were all negative. A Los Angeles physician was in consultation and he thought there was a deep abscess either in appendiceal region or in the region of the liver. A second operation failed to disclose any localized abscess. Following this, temperature ran to 106. Blood culture was again negative. Following day temperature was 107 and death resulted. An extremely interesting and well-worked up case—one of those heart-rending cases which cause gray hairs.

The seriousness of appendicitis as a professional problem is indicated by recently collected figures from the Bureau of Vital Statistics which show that 25,000 persons die annually in the United States from the acute form. These figures, even if only approximately correct, suggest that no member of the profession has a right to rest on the laurels of his record, but should be urged to a more intensive study of the whole problem of acute appendicitis.

In regard to the type of case just reviewed, a large amount of study is being done and these studies lean toward the thought that inflammations of the appendix are consistently paralleled by changes in the course and character of the blood vessels and it is believed that mesenteriolitis, beginning as a collateral involvement, may later constitute an infection independently of the original appendicitis. Feriz studied 953 cases from anatomical, pathological and bacteriological basis with view of involvement of appendicular mesenteriolitis and noted the following phases: Hyperemia, edema and early damage of the blood vessel wall; at a more advanced state, lymphangitis and lymphadenitis—diffuse and local serocellular infiltration and pus formation; the infection then mostly subsides but may



give rise to: (1) Injection of the mesenteric vessels, interfering with the blood supply of the appendix and leading to gangrene; (2) an ascending septic thrombosis leading to pyelophlebitis and multiple hepatic abscesses; (3) diffuse peritonitis. He found microorganisms in 47 per cent of his acute cases with an average duration of eighteen hours. Streptococci appeared to play the main role. Complications due to mesenteriolitis may arise even after the appendix has been removed. Supportive mesenteriolitis is clinically manifested by a chill or multiple chills. Some of the best men are advocating a ligation or better resection of the ileocolic vein as a routine measure in this type of case. If the diagnosis is made before the operation, the ligation is done before the appendix is removed. Personally, I should think, in a matted up mass which is likely to be encountered in these cases, the procedure would be difficult and endanger the patient, but it is being done and with a lessening of mortality.

While on the subject of appendicitis; that of the chronic form is being discussed more and more in the literature. In short, at present, it is not a popular diagnosis among our foremost surgeons. Carnett gives the opinion: Chronic appendicitis will soon be generally non-existent as it is now claimed to be by many of our best pathologists, or as an almost universal affection due rarely to a preceding attack of acute appendicitis but most commonly the result of degenerative changes which are incident to increasing age and develop too gradually to cause clinical symptoms. Lichty even advises against making a diagnosis of chronic appendicitis in the absence of a definite history of characteristic acute attacks. He believes that poor results from operation for chronic appendicitis represent not operative failures but diagnostic mistakes. Stanton divides his cases of failure into two groups: (1) Those of young women complaining of right inguinal pain which is usually associated with constipation; and (2) those in which appendectomy was done unsuccessfully for the relief of vague abdominal symptoms.

The following cases were reported and discussed:

#### CASE 6772

DR. EDWARD HOEHN of Buckeye. Male, age 42. Farmer. Had been ill one week when first seen. He complained especially of shooting pain through the abdomen. A few days before he had been nauseated and vomited. The morning of the day on which he was first seen he had extremely severe pain in the region of the appendix. He stated that he had had pain in this area off and on for 20 years or more.

Usual childhood diseases; influenza three or four times during the past five years; poor health for many years and had been subject to attacks of dyspnea and nervousness.

Head and neck essentially negative. The heart was irregular. Blood pressure 120-110/80. Abdomen extremely obese with definite tenderness over McBurney's point; rigidity was not marked. Other findings were essentially negative.

He entered the hospital on Sept. 25 with diagnosis of acute appendicitis, and operation was done the same day. An ulcer on the intestine, almost to the point of rupture or ruptured slightly, presented itself. This was excised. An end to end anastomosis of the bowel was made; a cigarette drain and rubber tube were left in the abdomen.

The pathological report reads as follows: "Microscopic sections show the intestinal mucosa intact, except at one small point where the glandular structure appears desquamated. There is a slight

inflammatory infiltration of the walls and a recent exudate on the peritoneal surface." Diagnosis was acute peritonitis with possible ulcer.

Following the operation the patient had persistent vomiting with relatively little tenderness in the abdomen. The urine was negative, except for an occasional pus cell. Following the operation the temperature gradually rose to nearly 104. The pulse rose rapidly from 88 to 140. The patient died on the fourth day following the operation. An autopsy was not obtained. It is believed that myocardial degeneration was largely responsible for his death.

The ultimate conclusions of the case were that he had a mild typhoid and that the ulcer was the result of the typhoid, and had the heart been normal the patient would probably have recovered.

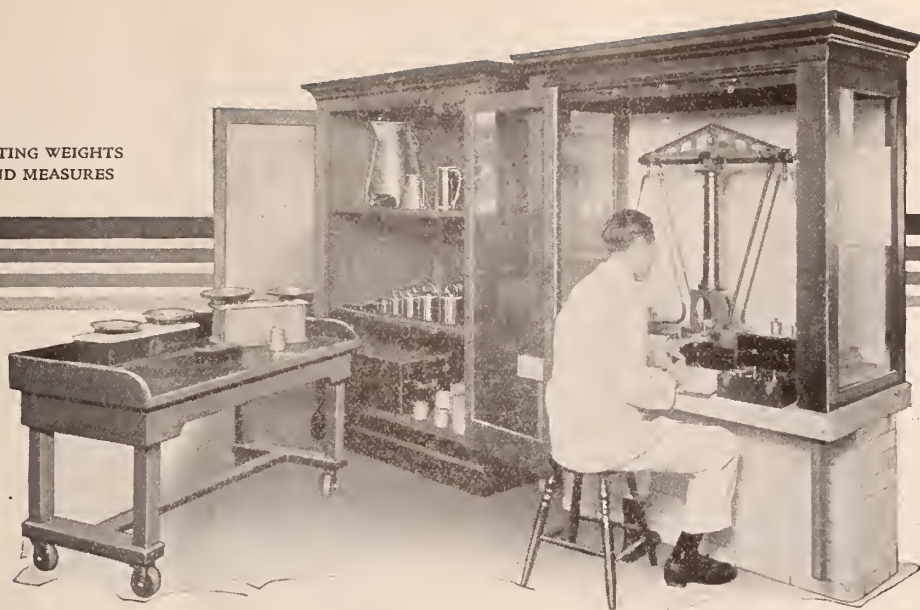
#### CASE 6679

DR. H. J. FELCH. Male, 33 years old, came in complaining of general weakness and a constant feeling of tiredness. He stated that prior to 17 months ago he was a strong, vigorous man and could do any kind of heavy labor without fatigue or worry. He then moved to Durant, Okla. This was a swampy region where there were many mosquitoes. Following this he began to have chills and fever and was tired and weak. The chills were not regular in appearance. They came one or two a week. These have reoccurred for the past 17 months. He has taken medicine from various physicians at one time or another but has not been greatly benefited. He had never gone to bed before this for any trouble. His appetite was ordinarily good and his bowels regular. He has had the usual diseases of childhood. He had been in good health until 17 months ago. He was married; his wife died from child birth. He has two boys living and well. Other history is negative.

White male, about 40 years of age, with fair muscular development and nourishment; dull, sleepy appearance. The skin was dry and slightly bronzed. The conjunctivae, eyelids and lips are pale. The pupils react to light and to accommodation. Chest shows equal expansion on the two sides. Breath sounds are normal; there may be slight impairment of both resonance and sounds at bases. Heart is slightly enlarged, sounds distinct, no murmurs and no accentuations. The abdomen is moderately distended; organs not palpable and no masses; no pain and no tenderness. The G. U. system, glandular system and extremities are negative. The reflexes are slightly exaggerated. The urine showed an occasional pus cell but was otherwise negative. Red blood count 2,700,000, hbg.40, leucocytes 11,200, 48 polys, 52 monos; reds were crenated and marked poikilocytosis with malaria plasmodia present. The Wassermann was negative. The temperature was not high at any time, never going over 99.4. It however usually reached 99 on each day. The patient was given 10 grains of quinine three times a day. He made a gradual improvement and left the hospital on the sixteenth day.

DR. GOSS said that malaria was rarely seen in this valley but that it is occasionally found. It is often of the chronic type which makes it difficult to diagnose. The plasmodia are often not found in the blood even though the disease exists. He then introduced DR. C. W. BROWN, who said that he had had considerable experience in the treatment of malaria. This was in Arkansas, where he had lived for a number of years. He said that arsenic was the agent of choice in the chronic cases as the plasmodia have a tendency to get resistant to the effect of the quinine. The arsenic renders them more susceptible to quinine.

TESTING WEIGHTS  
AND MEASURES



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DR. O. H. BROWN said that he had had a considerable experience in the treatment of malaria while on the visiting staff of the St. Louis City Hospital. He had received his early medical training in the University of Chicago and there he gained the impression that malaria was a disease which a layman could both diagnose and treat. The general belief was that malaria produced a chill every other day and that a few doses of quinine always cured the disease. This impression is far from the truth. Malaria is a most protean disease. He said that he had seen typical tertian malaria with chills and fever every third day as typical as any text book picture. Then he has seen tertian malaria simulate all other kinds of malaria and typhoid fever, tuberculosis, pleurisy and almost every other disease with which we are familiar. He has seen patients brought to the hospital after having had epileptic attacks and in coma and with bloody urine and many other conditions. All of these conditions may be due to malaria. He said he has seen them improved miraculously with a few doses of quinine. He has also seen them resist treatment for many weeks. Arsenic is of value in an occasional case but quinine long continued and in large doses ordinarily may be relied upon to cure malaria.

#### CASE 6744

Was reported by the secretary as DR. FAHLEN was not present. This was a woman 34 years of age, married. She came in with a skin eruption over her face, arms and exposed parts of the chest and back. There was intense itching. There was also swelling of the eyelids. For four days she had suffered with itching over the exposed parts of her body. She believes it is due to a nervous condition as she has recently been worrying over certain matters. She had had a previous attack a week before this, but it left in a short time. Four years ago she had a similar condition occurring with a nervous condition. Local treatment brought relief. She had the usual childhood diseases. She had influenza in 1917 and in 1925. She had an operation on her female organs in 1918. She began to menstruate at the age of 15. She menstruates regularly without pain, a moderate amount of three to four days duration. She has been married 19 years, and has three children. Her labors were all normal. She is troubled with constipation.

The physical findings were essentially negative except for the skin disturbance. There is an eruption by redness and edema of the skin and fine vesiculation with severe itching involving the face, neck, arms and dorsum of the hands. The involvement extends to the hair line of the scalp and over the exposed portion of the neck. The urine is negative except for a few pus cells. White count was 10,400, 79 polys., and 21 lymphocytes. The temperature was normal. The patient was given a light diet, mainly fruit juices. Olive oil and cocoa butter were applied to the face for itching. She was also given castor oil.


The patient made a rapid recovery and was discharged from the hospital at the end of the sixth day.

DR. CLOHESSY said that the condition might be allergy or simply a speeding up of the normal reactions of the skin which finally caused violent reactions. He evolved a theory to the effect that any material applied to the skin frequently would cause a mild reaction; these reactions may become more pronounced with each application of the material. He hesitates to designate this as allergy. He recommends the use of one per cent solution of carbolic acid and zinc oxide ointment to the irritat-

ed places. He says anything stronger has a tendency to irritate the condition.

DR. O. H. BROWN said that it appeared to him as probably a case of ordinary food sensitization. He has had repeated experiences in which nervousness has produced a condition in which eczema and similar conditions result. The explanation which he offers is that the nervousness had stopped the digestive process and whole food or partially digested food goes from the alimentary tract to the blood stream and causes an effect upon the skin known as eczema. These cases are usually effectively treated by aids to the digestion and by changing the diet so that the person will not eat the foods which they have been accustomed to eat, and which are the probable causes of the eczema. He is

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*Specify Mead's Viosterol because it is accurately standardized, uniformly potent, free from rancidity, and safe to prescribe. Mead Johnson & Co., Evansville, Ind., enclose no dosage directions, and never exploit the medical profession.*

<sup>1</sup>J. Biol. Chem., 76:2. <sup>2</sup>Ibid., 66:451.

<sup>3</sup>Ibid., 80:15. <sup>4</sup>Ibid., 76:251.

WATCH FOR SPECIAL COLOR  
SUPPLEMENT IN JOURNAL OF THE  
AMERICAN MEDICAL ASSOCIATION  
JANUARY 18th, 1930



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now using citric acid, 20 to 40 grains in a glass of water, taken with each meal and in the milder cases good results are immediate. In the severe cases it is frequently necessary to test the patient out for the foods which they are eating and to eliminate the worst reactors.

#### CASE 6609

In the absence of DR. COUCH, was presented by DR. KICKLIGHTER. This was a girl five years of age, brought to the hospital complaining of sore throat. She had had this sore throat for about 12 hours. Her appetite was poor. She had had a high fever for about 24 hours. She had always been in good health except for having had measles and mumps.

Examination revealed that the child was very restless at intervals, lying in bed with eyes crossed. She whines and calls for her mother. Seems to be in a mild stupor. Eyes react to light and to accommodation. Throat inflamed. Tonsils are greatly enlarged. The chest was normal. The heart sounds were fair but irregular. There seems to be a double beat about every fourth one. There was no distention of the abdomen and no palpable masses. The reflexes were exaggerated. The extremities were negative. A spinal puncture was done as soon as the patient entered the hospital and the spinal fluid revealed a cell count of 30,000 and meningococci were found on examination. The urine was negative except for a few pus cells and a very slight amount of albumin. The child was given anti-meningococcic serum and made a gradual recovery.

DR. MILLS, who assisted in the treatment of the case, said that in the early stage of meningitis intravenous administration of the serum is advisable but that in this case the daily administrations of the serum into the spinal canal had produced good results. He also believes that the serum we now have is more potent and more concentrated than it formerly was. He thinks there is rarely any good result from doing a cistern puncture. Occasionally there is a blocking of the canal so that a cistern puncture is necessary.

DR. MILLS reported experimental work which has been done showing that certain types of anti-meningococcic serum works better in one case than in others.

The hour of ten o'clock having arrived the meeting was adjourned.

ORVILLE HARRY BROWN, Secy.

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Because of this situation many physicians have become lukewarm on the subject of ultraviolet therapy. But they fail to appreciate the fact that the public is quickly learning the folly of self-treatment for any *abnormal* condition. The physician is still the only recognized authority who can determine whether ultraviolet is indicated or contra-indicated in a given condition, and what constitutes correct dosage. For those reasons, the thinking man still turns to his physician for advice and treatment based on a knowledge of what medical science has established.

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## PERSONALS AND NEWS ITEMS

DR. OSCAR S. BROWN, of Winslow, member of the State Medical Examining Board, was in Phoenix the first week in January, attending the quarterly meeting of the Board. Dr. Brown has recently returned from an extensive tour through Central America, including Mexico, Panama, Colombia and Cuba.

DR. JOHN W. FLINN, of the Pamsetgaaf Sanatorium at Prescott, has opened offices in Phoenix. He will be located at Suite 505 in the Goodrich Building, for office consultation in tuberculosis.

DR. ALONZO A. BROWNING, of Phoenix, has moved from his former location in the Luhrs Building, to Suite 204, in the same building.

HOTEL DIEU, (El Paso) MEDICAL AND SURGICAL STAFF has elected the following officers for the year 1930:

Chairman,—Dr. R. L. Ramey.

Vice-Chairman,—Dr. J. A. Pickett.

Secretary,—Dr. Will Rogers.

THE CITY-COUNTY HOSPITAL (El Paso) MEDICAL AND SURGICAL STAFF has elected the following staff for the year 1930:

Chairman,—Dr. W. R. Jamieson.

Vice-Chairman,—Dr. S. H. Newman.

Secretary,—Dr. Sherrod Mengel.

THE MARICOPA COUNTY MEDICAL SOCIETY (Phoenix), at their annual meeting held on December 16th, elected the following officers for the year 1930:

President,—Dr. Robt. T. Franklin, Glendale.

Vice-President,—Dr. J. M. Meason, Chandler.

Secretary-Treasurer, Dr. Victor Randolph.

Censors,—Drs. R. J. Stroud, (Tempe), J. M. Greer (Phoenix) and E. W. Phillips (Phoenix).

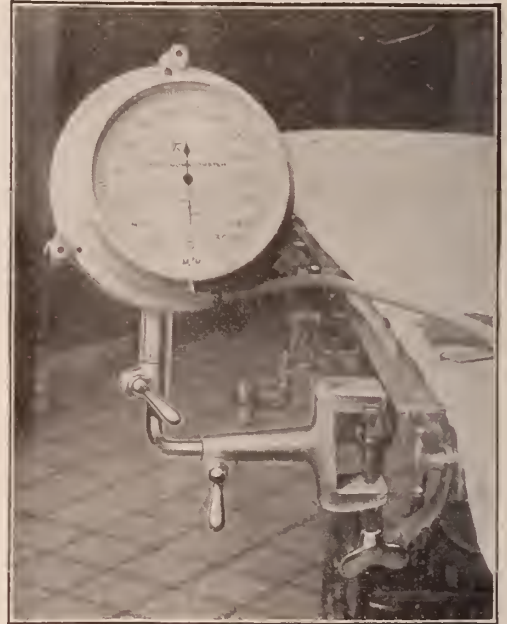
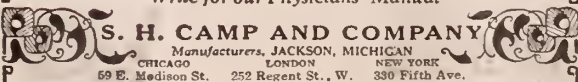
Committee on County Hospital, Drs. J. M. Greer and Howell Randolph.



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## BOOK REVIEWS

**PREVENTIVE MEDICINE:**—By Mark F. Boyd, M.D., C.P.H., Member of Regular Field Staff, International Health Division of Rockefeller Foundation; formerly Professor of Bacteriology and Preventive Medicine in the Medical Department of the University of Texas. Third Edition, Revised. Octavo volume of 475 pages with 151 illustrations. Philadelphia and London; W. B. Saunders Company, 1928. Cloth, \$4.50 net.

Dr. Boyd believes that the physician should play an important part in the field of preventive medicine and public health and that at present they are neglecting their opportunities. He also thinks that if the physicians continue to neglect this field it may be taken away from them by less competent, poorer trained, individuals.

It would seem that the field is of such importance that physicians may well afford to devote their time and energies to it. If the compensation is not adequate as yet, it is but a matter of having the public appreciate the full value of preventive medicine to get them to pay for it.

The vast amount of available material for this type of work has been greatly condensed. There has been attached to each chapter a list of references for supplementary reading.

The reviewer has no hesitancy in recommending this as one of the best works on the subject for the number of pages which it contains. O. H. B.

**THE SURGICAL CLINICS OF NORTH AMERICA.** (Issued serially, one number every other month). Volume 9, No. 1. (Mayo Clinic Number—February 1929) 247 pages with 141 illustrations. Per Clinic year (February 1929 to December 1929). Paper \$12.00; Cloth, \$16.00. Philadelphia and London. W. B. Saunders Company.

The fact that this is a Mayo Clinic number promises a most interesting volume.

An article which interested the reviewer more than others is entitled "The Postoperative Administration of Oxygen as a Prophylaxis Against Pulmonary Complications." In brief this article shows that the early administration of oxygen in pneumonia tends to lessen complications. If the oxygen can be administered before the pneumonia develops it tends to prevent the development of the pneumonia. The oxygen has been administered mainly by means of oxygen rooms in which patient and nurse are kept for periods of several days. More recently they have administered it hypodermically and find that it seems to work in about the same way as when given through the lungs.

Other articles of interest are "The Significance of Urea" and The Phagocytic Cells of the Mammalian Liver, Pulmonary Tuberculosis, Empyema, and a large number of purely surgical subjects.

O. H. B.

## THE TRUE STORY OF ACTEROL

To get the real facts on this important subject, do not fail to look for the special color supplement in the Journal of the American Medical Association for January 18.

In the meantime, please see the Mead Johnson announcement in this issue also entitled "The True Story of Acterol."

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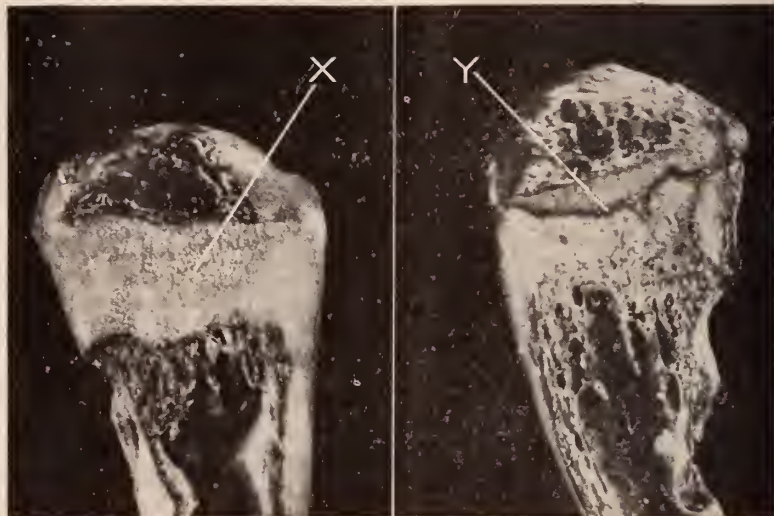
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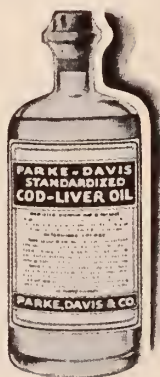
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*Illustrating "Line Test" method of standardizing Vitamin D content. At left, the leg bone of a rachitic rat showing induced decalcification area {X}. At right, healing has begun, as evidenced by initiation of recalcification at dark line {Y}.*

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Volume XIV

FEBRUARY, 1930

No. 2

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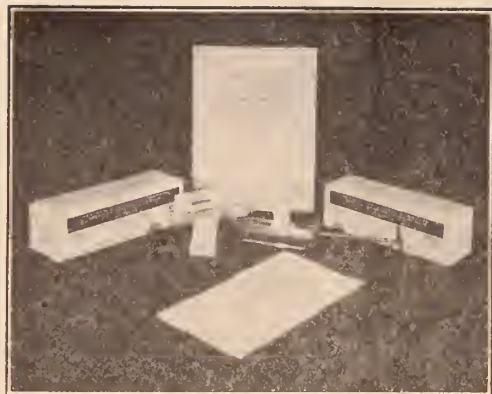
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10,000 to 20,000 units should be injected at the earliest possible moment after diagnosis.

Repeat every 8 hours until the temperature falls and beneficial effects are evident. If the disease is severe and the patient very toxic, double the unit dosage at 4 hour intervals.

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*A Treatise on Pneumonia  
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# Southwestern Medicine

PUBLISHED MONTHLY

Volume XIV.

FEBRUARY, 1930

No. 2

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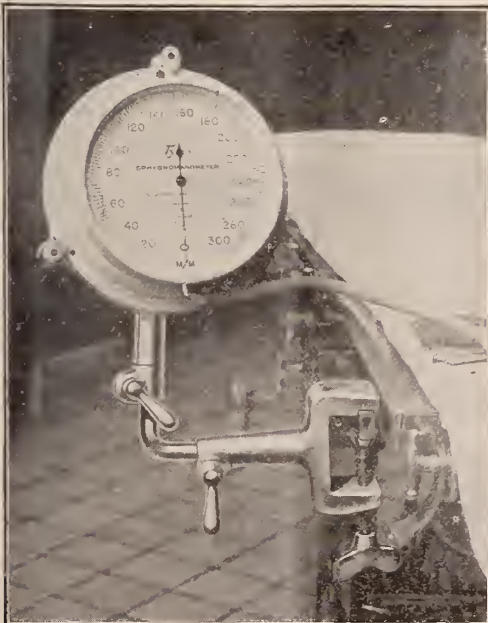
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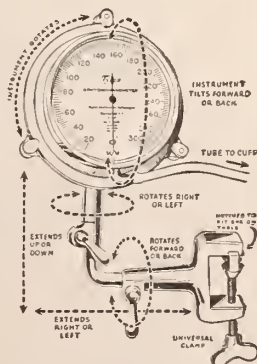


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## THE MANAGEMENT OF PATIENTS WITH GOITER

WALTER E. SISTRUNK, M.D.  
Division of Surgery,

The Mayo Clinic, Rochester, Minnesota  
(Read before the New Mexico Medical Society,  
Taos, June 12 to 14, 1929.)

We are so frequently consulted by patients for advice regarding goiters that I thought it might be of interest to review the common types of goiter seen clinically and to discuss the treatment which seems indicated.

So many and such complicated classifications for goiters have been suggested that they have been confusing to physicians who see only a few patients with goiter each year. For some years, we have followed the classification of Dr. H. S. Plummer and I feel that the classification which he has suggested is perhaps the simplest and the most accurate one that we have at the present time. He thinks we see three common clear-cut types of goiter: colloid goiter, adenomatous goiter and exophthalmic goiter. He believes that nearly all patients with goiter have one of these three types or a mixture of these types. We see some of the rarer of the thyroid diseases, such as thyroiditis, carcinoma, tuberculosis, and so forth, but these occur so infrequently that I will not consider them in this discussion.

### COLLOID GOITER

Colloid goiter occurs in young individuals and is not associated with hyperthyroidism. The entire gland is involved in the process and a symmetrical, "butterfly" type of enlargement of the thyroid gland occurs. The enlargement in such cases may be so slight as to produce only fullness in the neck, and again, it may produce a large goiter. The gland, on being palpated, is soft, granular, and lacks the hardness usually seen in exophthalmic goiter and the irregular nodules

found in adenomatous goiter. Some patients with colloid goiter become nervous over its presence and may also have a slight increase in pulse rate and perhaps in the metabolic rate. However, after they have been placed in bed for a few days, the metabolic rate usually will be found to be within normal limits. If the increased metabolic rate persists after such patients have rested in bed, the condition usually proves to be one of exophthalmic goiter.

Colloid goiter develops through the deposit of colloid material in the acini of the thyroid gland. Sections of such glands, when examined under the microscope, reveal acini filled with colloid material. The epithelial cells lining the acini are low, flattened, and distinctly different from those seen in exophthalmic goiter.

Colloid goiter is the one type of goiter which can be cured by medical management. In young patients the goiter, in most instances, can be made to disappear through the proper administration of thyroxine or desiccated thyroid gland; in young persons with colloid goiter, such treatment is preferable to operation. Treatment of this type should be used only for young individuals, and the patient should be carefully watched during the period of treatment in order to recognize hyperthyroidism if this should develop. In older patients with colloid goiter it probably is best either to leave the goiter untreated, or to remove it surgically and then to administer small doses of iodine; experience has shown that, in cases of older patients with goiters which are **not** accompanied by hyperthyroidism, it is likely that hyperthyroidism may develop when iodine is used.

### ADENOMATOUS GOITER

This type of goiter probably is seen more often than any other. It, too, usually begins



in young individuals and produces a nodular, irregularly shaped enlargement of the thyroid gland. It develops through the growth of small encapsulated adenomas which usually are scattered throughout the thyroid gland and which compress the thyroid tissue as they enlarge. When palpated, adenomatous goiter usually can be recognized by the rounded or irregularly shaped nodules felt in one or both of the lobes of the thyroid gland. In younger individuals it is not associated with hyperthyroidism. After the age of thirty, adenomas frequently undergo degenerative changes, and hemorrhages occur within their capsules; then various degenerative changes follow which produce the goiters which have been referred to as cystic goiters, calcareous goiters, hemorrhagic goiters and so forth. All of these types, however, should be looked on as degenerative adenomas and not as definite clinical entities. The largest goiters seen belong to the adenomatous group and nearly all cancers of the thyroid gland develop on adenomas in patients who have reached the cancer age.

Our statistics show that from twenty to twenty-five per cent of the patients who consult us with adenomatous goiter have hypothyroidism, but hyperthyroidism is seldom seen in patients under thirty years of age. The type of hyperthyroidism seen in adenomatous goiter and, in order to differentiate it clinically from the hyperthyroidism seen with exophthalmic goiter, it usually is referred to as "hyperthyroidism associated with adenomatous goiter" or "adenomatous goiter with hyperthyroidism." Hyperthyroidism associated with adenomatous goiter is similar to that seen in patients to whom thyroid extract has been given in doses sufficient to produce hyperthyroidism. Such patients are nervous, have tremor, an increased pulse rate, loss of weight and strength, a flushed skin, sweating, an increased metabolic rate, and so forth, as do all patients with hyperthyroidism. However, exophthalmos, such as is seen in exophthalmic goiter, does not develop, nor are the patients subject to the crises which occur in exophthalmic goiter. Hyperthyroidism associated with adenomatous goiter develops very insidiously and, no doubt, in many cases often exists for a long period before patients are aware of its presence. Many patients with hyperthyroidism from adenomatous goiter consult us for heart disease which they do not associate with the presence of goiter. Hyperthyroidism seen in patients with adenomatous goiter does not, as a rule, produce as high metabolic rates as one seen in exophthalmic goiter.

We know of no medicines which will cause such goiters to disappear. In certain young persons, a considerable amount of colloid material is present in the thyroid tissue surrounding the adenomas, and when thyroxine or thyroid extract is administered, the colloid material may be made to disappear. In this way, the goiter may be made to diminish somewhat in size. The adenomas, however, change very slightly, although their presence is more easily detected by the disappearance of the colloid material in the gland.

When we are consulted by a young person with adenomatous goiter, we usually advise that the goiter be left alone until the age of twenty-five or thirty years is attained and that partial thyroidectomy then be performed. Operation is delayed until this time for several reasons. First, experience has shown that hyperthyroidism is not likely to develop in such patients, if left untreated, before the age of thirty years. Second, the thyroid gland, no doubt, has considerable influence on the physical and mental development of younger persons, and for this reason it seems best not to disturb it until full development has been attained. Third, the growths are usually multiple and in young persons the adenomas are often so small that they easily can be overlooked at operation. Adenomas, undisturbed at operation, usually continue to grow and later produce a recurrence of the goiter. The risk of an operation for the removal of adenomatous goiter, in patients who are in good health and who are between the ages of twenty-five and thirty years, is so small that it seems better for them to accept this small risk than to allow the goiter to remain and subject them to a risk of probably six to ten per cent of developing hyperthyroidism later. The size of the adenoma, apparently, has little to do with the possible development of hyperthyroidism, and we often see very active hyperthyroidism produced by a single adenoma not more than two centimeters in diameter. Patients who are seen after hyperthyroidism from adenomatous goiter has developed, should be operated on without delay, provided their physical condition will permit of an operation being performed. Unless an operation is performed in such cases, degenerative changes occur in the cardiac muscles and other vital organs and after these have become marked, even though thyroidectomy is performed, it often is impossible to restore patients to perfect health.

Patients with adenomatous goiter not associated with hyperthyroidism and those with mild hyperthyroidism, in whom no

great cardiac injury has occurred, usually can be operated on without preparation.

Those with marked degenerative changes in the heart and other organs, who show evidence of cardiac decomposition through dilatation of the heart, shortness of breath, auricular fibrillation, and so forth, usually are first placed in bed for a few days; they are then allowed to get up a few hours each day and are operated on without further preparation or delay. When edema and ascites are present, patients are placed in bed for a longer period of time. If the edema and ascites are slow in disappearing, digitalis in small doses often is administered for short periods. The digitalis is then discontinued and the patients are allowed to get up for a short period each day. The length of time they are allowed to be out of bed is gradually increased, and then operation is performed. Our operative mortality is lower after treating patients in this manner before operation than by preparing them by a prolonged period of rest in bed and the administration of large doses of digitalis.

#### EXOPHTHALMIC GOITER

Exophthalmic goiter may develop at any age, but is usually seen in patients under forty years of age. The changes in the gland are diffuse and usually involve the entire organ. Enlargement is fairly symmetrical and often produces a butterfly type of enlargement similar to that seen in colloid goiter. The gland is usually harder than that seen in colloid goiter, and, as a rule, is not nodular like the gland seen in adenomatous goiter.

Exophthalmic goiter produces the symptoms usually seen in hyperthyroidism, such as nervousness, tremor, increased pulse rate, loss of weight and strength, flushed skin, sweating and increased metabolic rate. In addition, it usually produces, if the disease persists sufficiently long, untreated by iodine, thyroid crisis and exophthalmos.

If left untreated with iodine, the disease, in most patients, tends to run a definite course, although we find that the severity differs in different individuals and in different sections of the country. Most patients with exophthalmic goiter, if the disease is left untreated, have a gradual increase in the degree of hyperthyroidism for about six months and then a thyroid crisis develops. During such periods the patients become extremely ill and often have vomiting, diarrhea, mental disturbances and a very rapid pulse. The loss of weight and strength during such periods is very marked. Crises in exophthalmic goiter may persist for from a few weeks to one or two months, and in many patients

they have proved fatal. When the crisis subsides, the patient improves, and, although the hyperthyroidism persists, the patient usually gains in weight and strength and feels better in every way. After one or two years, a second crisis is likely to develop, and later, even a third or more. The disease tends slowly to cure itself but most patients, by the time this has taken place, have suffered such great injury to the heart and other organs that they are physical wrecks. At the present time, operation offers the best chance for relief of the disease.

If the operation is performed on patients who are properly prepared by iodine, early in the course of the disease, it may be done with slight risk and the results which follow operation done at this time are far superior to those which follow a late operation. The results from operation depend greatly on the duration of the disease and the amount of degeneration which has occurred previous to operation. Patients operated on before marked degenerative changes have occurred, and before exophthalmos has developed, in many instances, return practically to a normal state and are able to resume their normal station in life. The hyperthyroidism may be controlled at any time during the disease by the surgical removal of a sufficient amount of thyroid tissue, but it is impossible to restore the degenerated organs to normal.

At the present time, we know of no medical treatment which seems specific for exophthalmic goiter. No doubt, certain patients recover spontaneously, and from nonoperative treatment, but the percentage is not large and patients are likely, at any time during the course of the treatment, to develop a crisis. During a crisis, such great injury may come to the vital organs as to leave the patient a permanent invalid in spite of later operative or non-operative treatment.

Before iodine came into use for preoperative treatment, ligation frequently has been performed in exophthalmic goiter because it was found that, after ligation, patients gained in weight and were better able to withstand the high-grade hyperthyroidism which often developed after thyroidectomy. Plummer and his associates have shown that serious postoperative hyperthyroidism may practically be eliminated by administering iodine, before the operation, to patients with exophthalmic goiter. The administration of iodine cannot be looked on as a cure for exophthalmic goiter but as a highly valuable means of preventing serious postoperative hyperthyroidism. Through its use, it is now possible to perform thyroidectomy on prac-



tically all patients, without previous ligation. A primary thyroidectomy saves the patient much time and expense and often several months of active hyperthyroidism. The latter is extremely important, because, in many patients operated on after the older methods of preparation, the two or three months of active hyperthyroidism which persisted between the ligations and the thyroidectomy allowed enough injury to the vital organs to take place to prevent a satisfactory result from operation.

Through the use of iodine, the hyperthyroidism seen in exophthalmic goiter is changed and is more like the hyperthyroidism seen in adenomatous goiter or that produced in patients by giving large doses of thyroid extract. It is also possible, through the use of iodine, to cause the thyroid crises seen in exophthalmic goiter to disappear very rapidly. By such treatment, many patients who are first seen during a crisis may have a primary thyroidectomy performed within ten days or two weeks, with a high degree of safety.

As a rule, as soon as the diagnosis has been established, iodine in the form of Lugol's solution (compound solution of iodine) is given in doses of thirty drops a day over a period of from eight days to two or three weeks. Then thyroidectomy is done. On the morning of the operation, patients are usually given forty minims of Lugol's solution, in divided doses by mouth, and after the operation they are given thirty minims of this solution in the first 1000 c.c. of salt solution which is given by proctoclysis following operation. By this means of preparation, the mortality from thyroidectomy for exophthalmic goiter has been definitely reduced and, at the present time, is considerably lower than one per cent.

The metabolic rate gives a very accurate estimate of the degree of hyperthyroidism present at the time it is taken, but alone it is of little value as a means of determining just when an operation should be performed for exophthalmic goiter. In some patients, a high metabolic rate may exist without symptoms or signs which would lead one to feel that thyroidectomy could not be performed safely. Again, another patient might have a low metabolic rate but might be in crisis.

#### SUMMARY

Clinically, practically all goiters may be classified under three heads: colloid goiter, adenomatous goiter and exophthalmic goiter. There are, also, combinations of these types. Colloid goiter is a goiter of youth, unassociated with hyperthyroidism and may be cured, usually, by medical management. Ad-

enomatous goiter also usually begins in youth. In younger persons, it is not found associated with hyperthyroidism. It produces a nodular, irregularly shaped goiter and about six to ten per cent of the patients later develop a type of hyperthyroidism which differs from that seen in exophthalmic goiter. Adenomatous goiter does not respond to medical treatment and should be looked on as a surgical condition. The most advantageous time for the surgical removal of such goiters is between the ages of twenty-five and thirty years. Exophthalmic goiter may occur at any age. It is always associated with hyperthyroidism. It responds best to treatment by operation and the earlier the operation the better the end-result. Iodine used as a means of preparing patients with exophthalmic goiter for operation diminishes very greatly the chance of serious postoperative hyperthyroidism and thus materially lowers the mortality from operation.

#### SOME FACTORS IN INFECTIOUS INFLAMMATION OF THE EYE

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At the outset of this talk, I am impelled to quote a remark of a recent speaker before a University Club gathering. His subject was "Some Dangers of Modern Higher Education," and the statement I refer to was as follows: "No modern institution of higher education can look with complete satisfaction upon a graduate who does not manifest certain tendencies to modify or upset things as they are today." This is another way of saying that "eternal dissatisfaction is the price of progress." In discussing things as they are today, one must steer between the Scylla of complacent stagnation and the Charybdis of destructive criticism. My theme is not new; the arrangement differs somewhat from the ordinary version. It may happen to leave some constructive thoughts in the minds of the hearers.

In considering any problem of scientific nature, it is safe to keep in mind general principles deduced from observation and experience. In the field of medicine, general principles assume value and importance directly commensurate with the elusiveness and changeable nature of living elements in contrast with the inert elements of such studies as metallurgy or geology. In the study of these, as of medicine, important roles are played by microscopy, chemistry, physics, and morphology, but with the great

difference that the units of matter, as subjects for study and investigation, are accessible and in great measure unchanging, whereas, in medical science, their investigation in the living state is almost impossible. Scientific medical studies must, perforce, accept at the outset the great handicap of all the difference between living and dead states. The crystal is consistently itself; the living cell is inaccessible; the dead cell is a vestige. As an avenue of approach to the consideration of medical problems, in spite of all handicaps, it seems unavoidable to begin with the cell.

A typical cell, the ultimate subdivision of the organism, comprises: pericellular membrane, protoplasm, nuclear membrane, nucleus; each is surrounded by fluid. Only casual observation is required to notice the similarities, emphasized by Crile and others, between a body cell and an electric battery. Each has electrolyte, a permeable cell wall, a positive element and a negative element; under ordinary conditions each is a source of energy; discharge of cell energy results in a fall of cellular potential; re-energization of the cell occurs during rest, with restoration of positive and negative potentials; ultimately, each "runs down," becoming a "dead cell," generating no more energy. The electrolytic pericellular fluid is the only avenue of access to the body cell; all necessities reach the cell, all waste products leave the cell, through this pericellular fluid. But metabolism is not a simple process. Nutrition and excretion occur in accordance with biochemical and biophysical mandates, many of which are not fully understood. By the term "chemotaxis" is indicated an uncanny power of the cell to appropriate to itself from its fluid environment what it needs, when it needs it. Vitamins, hormones, enzymes, lysins, agglutinins, bacterins, and other more or less vague substances are taking shape in the scheme of things and are beginning to shed additional light on cellular phenomena. Various groups of cells evolve each subserving special function; each special function group of cells for essentials to its own operation. Each group is predestined to mature in more or less definite sequence, according to ontogenetic and phylogenetic patterns; no group of individual cells is sufficient unto itself, but each is dependent upon the others. The sum total of all cell-group functions spells the physiologic efficiency of the individual.

The timely regression of certain essential structures such as the thymus, the evolution of others, as the thyroid and gonads, at the

predestined stage, the timely and proportionate termination of skeletal growth, and all the myriad of glandular, nervous, endocrine, and psychic phenomena which we accept unnoted as "just normal"—these are some of the results of interaction of cell energies and activities upon one another. Given a departure from normal developmental sequence and balance on the part of one or more cell groups, and there may ensue mal-developments, among which may be mentioned precocity, cretinism, status thymicolymphaticus or epilepticus, family amaurosis, Friedrich's ataxia, gigantism, albinism, eunochism, or some of the less tangible, tone deafness, color blindness, sexual, religious, moral and criminal psychopathies.

Developmental disturbance is manifested by departures from, or perversions of, normal cell-destinies; in some individuals "anlage," the precursors of diploic or pneumatic bone, suffer some alterations of normal evolutionary destinies during the formative years, with the result that dense cortical bone develops instead of normal cancellous or pneumatic bone; or spongy embryonic bone forms in certain areas at the age when dense cortical and cancellous bone should have evolved. Such perversions of normal cell destiny occur in so-called "ato-sclerosis" or spongification of the labyrinth capsule. These changes are not inflammatory and are analagous to those seen in acute yellow atrophy of the liver, von Recklinghausen's disease and in pigmentary degeneration of the retina. As an example, the individual with abnormal pneumatization of upper respiratory structures—nasal sinuses and mastoid cells—is very poorly equipped, both physically and physiologically, to meet the upper respiratory exigencies of life. The physical handicap of subnormally pneumatized aural and nasal accessory sinus structures lies in lack of the requisite pneumatic buffers, resonators, emergency expansion and torsion spaces, lending to that part of the cranium lightness, resiliency and elasticity. The physiologic handicap of sub-normal pneumatization of these regions lies in lack of adequate secretory, excretory and absorption areas to meet inflammatory and traumatic emergencies. The importance of accessory sinus and cellular equipment may be realized when one contemplates this first line of defense in infectious inflammatory tissue reactions. Given sufficient highly specialized, epithelial structures, with a generous complement of glandular, vascular and lymphatic equipment, and space for emergency fluid content increase without undue crowding, it is possible for tremendously effective tissue



reaction to take place without undue symptoms, tissue destruction, ulceration or abscess formation. Rapid and efficient removal of noxious, infectious and inflammatory products to distant disposal structures, via the efferent vascular ways, affords advantageous opportunity for full reactive cooperation of the general protective mechanisms of immunization and of special excretory organs, such as kidney, lung and skin. When the scenery is thus set to the disadvantage of the individual, one of the etiologic factors in respiratory infectious troubles of adult life dates back in inadequate structural and architectural development of pneumatic spaces.

In the second instance, "spongification" of bony areas such as the labyrinth capsule, results in impairing of motility of the stapes foot-plate, or encroaching upon the space required for the eighth nerve, with resultant pressure-atrophy in the internal auditory meatus. Included in this general category are such conditions as osteogenesis imperfecta, osteomalacia, osteodystrophia fibrosa. Investigations of these conditions have shown disturbances of calcium, phosphorus and other ion concentrations, and additional important studies are under way through the researches of the Hooper Foundation and the American Otologic Foundation.

Another very striking category of cellular departures from normal is the allergic-anaphylactic group. No abnormal cellular evolution is seen in this group, but rather a peculiar type of tissue reactivity to ordinary innocuous agents. Allergies take widely different forms: An individual of one generation may manifest skin reactions such as eczema or urticaria to some food sensitization, one of a second generation manifesting conjunctival and nasal irritability to certain pollens, one of a third generation manifesting bronchial asthmatic reactions to animal danders, one of a fourth group reacting to wheat, or eggs or milk, for example. In the acute lesions of each of these, excessive transudation and hydrops-lacrymation, rhinorrhea, or local edema—are characteristic local manifestations of the general condition of tissue-sensitivity. Allergic studies have done much to illuminate some of the particularly dark passages of upper respiratory ills. Hives, wheals, urticarial lesions and angio-neurotic edemas appear in certain individuals unaccompanied by other evidences of abnormality, run their course and disappear, untreated and unwept. In others, there is apparent a significant succession, usually beginning with nasal and conjunctival irritations or eczema; there may ensue in one individual, asthma, sinusitis, arthritis, arterio-sclerosis and hypertension;

in another, mucous colitis, neurosis or psychosis and hypertension.

We are accustomed to think of allergic manifestations as limited to conjunctival, nasal, bronchial and skin areas. It seems, however, that the gastro-intestinal, eustachian and tympano-mastoid areas are also the sites of allergic irritative and inflammatory manifestations; also, the nervous system. Many causes of acute otitis media, migraine, and gastro-enteritis present characteristics of acute allergic reactions.

Tendencies to allergic tissue-reactions are inherited according to Mendel's law; again, the scenery is set to the disadvantage of the individual of a still earlier etiologic factor in upper respiratory troubles of adult life. How much of an allergic element is present in acute infectious upper respiratory inflammations is not yet clear, but there are many indications that certain recurring acute upper respiratory infections also partake of the nature of allergic reactions; just as friction, contacting the fulminant tip of a match, sets off the inflammatory chemical reaction in the match-head sufficient to start the wood burning, so allergen, contacting the allergic-sensitive epithelium, sets off reactive tissue irritation sufficient to start up acute infectious inflammation.

The importance of dietary influences upon tissue reactions has been shown by many investigators. Evvard and his associates have demonstrated the possibility of developing, in certain individuals of a litter, paranasal sinusitis, hyperplastic ethmoiditis and sphenoiditis with edematous and polypoid degenerations, simply by deprivation of sunlight or of certain vitamin food content; and they demonstrated, further, the ability of these tissues to return to normal under the influence of sunlight and the necessary vitamins. Hemorrhagic and degenerative lesions of the periosteomucosa have long been known to occur as a result of deprivation of fresh vegetables, and to disappear under the influence of fresh fruit juices, notably citrus fruits.

This—perforce cursory—allusion to untoward effects of vicious dietary influences upon the upper respiratory tissues, brings up another early etiologic factor underlying infectious troubles encountered in later life.

Under modern conditions of living, one must recognize in early childhood a period of several years, approximately between two and nine, as the time of average (or normal) child's beginning world contacts with foods, with environments, with indigenous infections. It is by no means true that all children manifest reactions to unprecedented

environmental contacts either in the same way or at the same age. Among these adaptations, immunity acquisitions include the so-called "infectious diseases of childhood"—but a list of the exanthemata by no means completes the infectious catalogue. It is safe to say, however, that a large part of the first decade is included in this period of immunizing contacts, and practically all normal children undergo with more or less impunity these gradual and natural immunizations. Upon his acceptance of some such fundamental conception of a period of what might be qualified as "normal illnesses," must depend the attitude of the physician in shaping up diagnosis and deciding upon treatment. Many children undergoing natural contacts with tuberculosis, streptococcus, pneumococcus and other widespread strains of infectious organisms, manifest slight and indefinite groups of symptoms, falling into the "febricula" category; others manifest symptoms referable to respiratory, digestive, or both tracts; many fall into the category of "adenoid and tonsil troubles," with or without lymph-node affections. During these constructive episodes of more or less critical nature, traumata are sometimes poorly borne and affections of apparently unrelated and remote tissues are encountered—such as pyelitis, tenosynovitis, myositis, chorea, endocarditis, aprosexia, eczematoid skin and scaly lesions, and various allergic reactions. Normally, these immunizing reactions of childhood are destined to successful termination by the earliest years of the second decade.

Before the age of maturity, the individual has demonstrated with what success his own adaptations have proved able to cope with the difficulties encountered, and his own "norm" can be fairly determined. These fundamentals of human natural history, considered in conjunction with individual history, and diagnostic study, will crystallize decisions as to what should be attempted when confronting an individual problem; and therapeutic measures fitting into the picture will naturally suggest themselves. Except in rare instances, the value of bacteriologic and x-ray findings in the commoner upper respiratory inflammations, is confined to confirming details of the physical diagnosis, and they should not be exalted to the role of indicating the surgery. For example, nothing could be further from the point than to construe extensive pneumatization revealed by x-ray as an indication for surgery. Successful local reaction is usually directly—not inversely—proportional to extent of pneumatization, other resistance factors being equal.

The factors introduced by "physiologic infectious illnesses of childhood," and the outcomes of individual encounters with them, thus assume shape as additional early etiologic factors in upper respiratory infectious inflammations encountered in adult life.

To the absence of sufficient halogen salts in certain areas, notably Tyrol, Switzerland, and certain other parts of the country, has been attributed an extraordinary incidence of goitre. Giving the children of these localities amounts of iodine salts three or four times yearly has shown marked reduction in the incidence of certain types of goitre. Dysthyroidism, with general endocrine imbalance, is an element of many upper respiratory inflammatory conditions of adult life and must be mentioned among the etiologic factors under consideration.

The rhinologist is particularly interested in the physics concerned with physiologic operation in sinuses. Normally, gravity plays no part in sinus drainage. Yates studied the behavior of lamp-black and carmine solutions in tracing the natural routes from these areas. He observed that by action of the cilia the secretion within a sinus is rolled over and over, completely enveloping foreign particles enroute to the normal opening of the sinus. Phillips also studied this subject, using finely powdered India ink, which he observed to be miced out through the normal opening into the nasal chamber, reaching the orifice in forty-five minutes. Within the sinus, the mucosa has a very delicate basement membrane, and contains very few glands; whereas, at the nasal end of the natural openings, glands are most plentiful. As the contents are exuded from the sinus, they come into immediate contact with mucosa having cribriform basement membrane, the stomata opening into the sub-mucosal lymph lacunae, whose efferent tracts lead directly back and down the great lateral lymphatics of the pharynx. Carmine solutions emerging from the sinuses take the backward and downward direction, following a definite track in front of the eustachian orifice, between the attachment of the soft palate and the posterior pharyngeal wall; at the tongue level, the stream divides, a portion being distributed across the dorsum in the region of the lingual tonsils. In cases where bone wax was used to plug the normal opening for three days, there was evident no absorption of India ink; on removing the plug, the ink then proceeded outward from the sinus in the manner previously observed and disappeared at the former rate of speed, namely, in about forty-five minutes. Now, as to the subsequent course of the particles of lamp-



black, India ink and carmine after ciliary action has removed them from the surface of a nasal sinus, Henderson and Goodale observed that these particles of inert matter make their way between the cells of mucosa, reaching the deeper tissues rapidly, and are thence disseminated by lymph streams. Wright verified these observations, and added that surface epithelium possesses a mechanism which permits the ready passage of inert particles but which does not, under ordinary conditions of health, permit passage of living particles, such as germs. He examined mucosa from coal regions, which showed coal dust passing the mucous barriers readily, just as did carmine granules in the experiments of Hendelsohn. From these observations, and the finding that micro-organisms readily pass these same epithelial barriers in disease, he deduced that "there must be something beyond mechanical obstruction which, under ordinary conditions of health, keeps the tissues beneath the epithelium free from the bacterial life outside the epithelial cells." In the work of Mudd, there is much evidence to support the following statement: "The shock of an injury, upset of neuro-vascular balance by profuse hemorrhage, even lesser physical or psychic trauma, increased hydrogen ion concentration or shock of cold to the surface, may disturb conditions sufficiently to open portals to infection."

Wilson pointed out that the movements of small particles of inert matter upon liquid surfaces represent mass adjustments to surface tension. Much physiologic speculation and thought has been devoted to the phenomenon of the stalling of this "Brownian motion" by spraying the surface of contact with a nebula of oil, or by a film of soap bubble. The change is of the nature of the result of "oil upon troubled waters." The occurrence of neutral fats, lipoids and soaps in and upon body cells is commonly observed and Wright has made the pregnant suggestion that "a minute coating on an epithelial of a lipo-proteid of proper surface tension suffices to repel a bacterium; one with a bad index allows bacteria to pass." It is not difficult, nor is it inconsistent with certain known bio-chemical facts, to conceive a combination of natural circumstances of etiology along the lines indicated by these suggestions culled from the work of Hendelsohn, Mudd, Wright and Wilson.

Given an etiologic shock—either toxic, traumatic, thermal, emotional or mixed,—nerve impulses disseminated via the sympathetic distribution initiate glandular, vascular, and electrolytic changes throughout the

organism, characterized by altered secretions, altered local and general vascular balance and pressure, altered hydrogen ion concentration upsetting the alkaline reserve and super-inducing local and general acidosis, alteration of inter and intra-cellular neutral fats with resulting change of surface tension on various epithelial and endothelial cells. Such a train of changes brings about upsets of pre-existent quiescence between tissues and organisms, precipitating acute bacterial inflammations of upper respiratory, lower respiratory, gastro-intestinal, and genito-urinary tracts, manifested clinically by acute inflammations, such as rhinitis, bronchitis, gastro-enteritis, pyelo-cystitis. How often does one hear the "caught cold in the bowels" or "in the kidneys" and how meaningless have such expressions been! On the conception of a mechanism of etiology such as this, one can understand how chilling of the ankles might set up a pyelo-cystitis, enteritis, or inflammation of the antrum, the severity or mildness of which would depend upon the virulence or attenuation of the organisms present at the moment. There remains much to amplify this concept before clearing up the reasons for tissue breakdown in acute infectious inflammation. Why do we find localized tissue breakdown en masse on one arytenoid in the course of tuberculous laryngitis and no ulceration on the other arytenoid, for example? Exposure to relatively greater degrees of traumatism undoubtedly plays a part in the determination of ulcer formation; the relatively greater inherent strength and tolerant qualities of certain tissues as compared with others immediately contiguous undoubtedly also plays a part, as must the circumstance of the particular bacteria present—witness the characterization of certain strains of streptococci as "non-pyogenic," of others as "pyogenic." Within this terra incognita one must include unknown factors whose very numbers and variety are so indefinite as to have prompted Wright's descriptive phrase "that concatenation of circumstances which constitutes the practical etiology of Nature."

In view of the nature and multiplicity of etiologic factors involved in inflammatory tissue-reactions, it seems that the crux of many problems of acute infectious inflammation is not so much the actual invasion by pathogenic and toxin-producing bacteria, but rather certain tissue-conditions determining or predisposing to their invasion.

Civilized existence includes a practically universal dissemination of pathogenic organisms, many of which carry their bacterial "stow-aways" with impunity a large part of

the time. Certain organisms may be capable of setting up infectious inflammatory reactions by mere contact alone, regardless of the condition of susceptibility or resistance of the individual at the time; this is not stated as an established fact, but simply as possibility that certain disease-producers are endowed with especially high capacity for infectious insult—sufficiently effective to get by the physical and physiologic defenses of tissue despite conditions of full normal health and well-being. Even should this be granted, it is certain that such super-effective attack is characteristic of very few organisms. Typhoid, diphtheria, tubercle, staphylococci, pneumococci, ordinary streptococci, spirilla, and numerous other bacteria live, eat, sleep, work and play with human beings constantly without interrupting the course of continuous good health. Only when something additional turns the scale in an individual is the state of equilibrium upset between tissue-resistance and bacterial invasion, determining the onset of infectious inflammatory reaction. This "something additional," be it fatigue, trauma, emotion, exposure, intoxication, or any combination of these or other influences, attains, for the time being, the dignity and importance of catalytic agency, and, as such, comes into the front rank of etiological factors. In this front rank, it finds itself shoulder to shoulder with other etiological factors of upper respiratory infectious inflammations. Some of these have been alluded to in this discussion, which is offered in the hope that it may be of help in negotiating the difficulties presented by these cases.

## THE NEGLECTED PERFORATED APPENDIX

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(Read before the New Mexico Medical Society, at its Forty-Seventh Annual Meeting, at Taos, New Mexico, June 12-14, 1929.)

Fifteen years ago it seemed that the last word in the treatment of appendicitis had been spoken. The almost universal advice was, "Grub out the appendix as soon as the diagnosis is made." And what pitiful results have followed!

Of late, renewed interest has been taken because the profession has awakened to the appalling yearly mortality of 25,000 from acute appendicitis in continental United States.

The tables (Table 1.) here presented show the mortality according to government statistics. These are not pleasant to contemplate—especially when the writer comes

from the state having the highest mortality rate.

Where does the responsibility lie? Largely in family ignorance, somewhat in the family physician and, lastly, in poor surgical judgment.

When the combined efforts of family intelligence, keen physician and skillful surgeon are present, the mortality is practically zero—for the offending appendix is removed before rupture has occurred, the abdomen is closed without drainage, and recovery is prompt and ideal.

How different when perforation has supervened! Shall we operate at once? Usually, if perforation has occurred within twenty-four hours of the onset of the disease, this is the safest procedure. There must, however, be a careful consideration of other factors. Is the patient dehydrated? Is he suffering from hypochloremia? In other words, is he too toxic to be a risk for immediate operation?

One of the saddest pictures in the whole problem is that only too frequently the acute appendicitis case has been given a cathartic. When this is vomited, he receives another dose. Apparently, increased vomiting demands increased cathartics on the part of the anxious but ignorant relative. And only too often this treatment is encouraged by the physician. From statistics it has been proven that a great majority of all serious cases have been given a cathartic soon after the onset of the disease.

Catharsis not only violates the first principle of abdominal surgery—rest—but it contributes to rapid dehydration.

It has been estimated that about seven quarts of normal secretion is formed daily in the upper intestinal tract. Vomit this up and how great the demand for more fluids! The waste of chlorides in vomitus often produces a loss of more than fifty per cent of this vital chemical in the blood. Add to this the strain of vomiting, with further loss of fluids through perspiration induced by the act.

In spite of such a picture, suppose we further assault the patient with anesthesia and operation. Then we almost invite death in our patient.

Our greatest hope in the neglected patient lies in control of vomiting, restoration of water and salt balance to the body, and operation when, if, and as, the proper time comes.

To control vomiting the stomach tube frequently used is our sheet anchor. When inserted properly, it causes very little distress. After its use, the patient soon learns to beg



for it when hiccoughs or nausea returns. The retained duodenal tube may be tried for its constant drainage effect. Sometimes it is very efficacious. Its presence often disturbs the patient.

Water and salt balance must be restored as soon as possible. It is safe to give two per cent salt solution beneath the skin. The veins will tolerate as high as five per cent solution, if given slowly: that is, not more than 500 c.c. per hour.

While a laboratory is not always available for testing the salt content of the blood, we can at least give normal saline after the first large dose of salt solution. Normal saline should be given in large enough quantities to total 6,000 c.c. in twenty-four hours.

The real guide is clinical observation: the cleaner and moister tongue, the better facial expression, better pulse and increased urinary output. Of course nothing is to be given by mouth, (excepting the stomach tube). During this stage, I rarely give saline by bowel, either in quantity or by the Murphy drip. The patient has enough discomfort without a sore rectum.

Sometimes, in long continued cases, food may be a question. This is readily solved by giving glucose with the saline.

The progress of the case is often gratifying, even though desperate in the beginning. Soon, as improvement in the general condition manifests itself, we wonder when to operate. There is one decisive answer: Don't be in too big a hurry—so long as the patient continues to improve.

It also seems to be a very common observation, that operation between the second and sixth days following the beginning of the acute attack is the most dangerous. This appears to be the result of other factors besides dehydration and hypochloremia: First, the individual has not had time to develop an immunity to spreading infection; and, second, tearing the lymphatics during operation before they have developed their defensive mechanism seems to spread infection.

#### OPERATION

Whether operated early or late; whether the acute appendix is ruptured or unruptured, gangrenous or with localized abscess or general peritonitis, I proceed with the operation as follows:

Anesthesia—local until the peritoneum is opened, then gas-oxygen during the intraperitoneal manipulation. I prefer the old McBurney gridiron incision, made well out toward the ilium. This incision presupposes a correct diagnosis. Its advantages are that, should pus be encountered, it is reached from the side with the minimum danger of disturbing protective adhesions.

The appendix can be removed in practically all cases. There are times when it should be left alone—when it cannot be found without pawing over the intestines or tearing the adhesions to a dangerous extent. In other words, the appendix should be removed when possible by using extreme gentleness.

No sponge is allowed within the peritoneal cavity; nor is the cavity irrigated. We are only too prone to forget that the intact peritoneum is highly resistant to infection. Why, therefore, should we denude more gut by sponging, or wash more infection into the lymphatics by irrigation?

Leave the pus alone. It will run out if given a chance.

If no perforation is found, the appendix is removed and the wound closed without drainage.

If perforated, drainage is inserted—by preference, one or more wicks made of rolled rubber strips cut from surgeon's old gloves.

Place the drains where the pus has accumulated, at the base of the cecum, or behind the cecum, or into the pelvis, as indicated.

If there be an abscess cavity, tubes are sometimes used. The chief objection to their presence is the danger of pressure necrosis, resulting especially in perforation of the gut or marked sloughing of the abdominal fascia.

In the presence of pus, the wound is left wide open unless there is a marked tendency towards intestinal prolapse, in which case a stitch or two of plain catgut through the peritoneum is sufficient. Why close the abdomen? If we have an abscess elsewhere in the body and open it, do we sew a part of it together again? Why drag infected material through muscle, fascia and skin with our suture material?

It has been found that without stitches the sloughing of the anterior abdominal wall is lessened and the danger of postoperative hernia is reduced more than half.

A pad is applied to the wound, kept moistened with hot boric acid solution, and a hot water bottle is applied over all. These dressings are changed as often as they become offensive. After pus has disappeared, the wound is drawn together by adhesive strips.

After operation, saline and glucose are given intravenously and the stomach washed out as indicated. The Fowler position with the patient lying on his right side, is assumed.

When the condition is complicated with a general peritonitis, a rather low jejunostomy has seemed preferable to one higher up. Before making this a statement of fact, further study is necessary.

TABLE 1.

Death rate from appendicitis and Typhlitis per 100,000 estimated population.

Area.	1920	1921	1922	1923	1924	1925	1926
The registration area in continental							
United States .....	13.4	14.4	14.2	14.8	14.9	15.1	15.0
Registration States <sup>1</sup> .....	13.2	14.2	14.0	14.6	14.6	14.9	14.7
Cities in registration States <sup>1</sup> .....	19.2	20.2	19.9	21.2	21.5	21.9	21.7
Rural part of registration States .....	7.5	8.4	8.5	8.5	8.4	8.7	8.5
Registration Cities in non-registration States.....	26.4	30.5	29.6	28.6	32.7	30.0	28.0
All registration cities <sup>1</sup> .....	19.4	20.5	20.2	21.4	21.8	22.2	21.9
Alabama <sup>2</sup> .....						13.4	11.2
Arizona <sup>2</sup> .....							13.3
California .....	13.0	15.6	17.2	16.9	19.3	16.0	15.9
Colorado .....	24.5	22.8	30.5	25.1	24.7	24.8	26.1
Connecticut .....	9.5	12.6	13.2	11.9	12.4	12.7	12.3
Delaware .....	9.4	6.2	10.1	11.3	7.7	8.0	10.8
Florida <sup>3</sup> .....	10.5	12.4	11.5	12.2	11.9	15.1	18.1
Georgia <sup>2</sup> .....			10.6	11.2	10.5	*	*
Idaho <sup>2</sup> .....			16.5	12.5	18.5	15.4	14.4
Illinois .....	15.6	16.4	15.6	17.2	16.3	17.4	17.2
Indiana .....	12.7	15.5	14.2	15.4	14.0	15.9	13.3
Iowa <sup>2</sup> .....				14.9	16.5	15.7	15.9
Kansas <sup>3</sup> .....	15.6	15.7	17.8	17.1	17.2	17.4	17.3
Kentucky .....	8.2	10.6	11.0	12.8	11.2	12.4	11.4
Louisiana .....	13.0	16.1	13.0	14.3	16.2	18.9	15.3
Maine .....	17.7	17.0	15.9	18.1	15.9	16.9	15.3
Maryland .....	10.1	9.6	10.0	10.6	11.6	11.2	10.3
Massachusetts <sup>3</sup> .....	11.8	13.2	12.5	13.3	14.0	13.3	12.6
Michigan .....	16.0	16.3	13.9	15.9	15.8	16.8	16.5
Minnesota .....	17.7	18.7	16.7	17.3	17.1	16.6	15.3
Mississippi .....	12.7	14.0	12.3	13.9	12.8	15.9	15.1
Missouri .....	14.0	15.1	15.0	17.4	15.3	16.2	16.9
Montana .....	22.2	21.5	18.9	15.9	14.9	14.7	14.7
Nebraska .....	19.1		18.1	20.0	18.2	19.7	19.5
New Hampshire .....	11.5	15.1	15.9	14.1	15.1	13.1	12.3
New Jersey .....	11.1	12.1	12.1	13.2	14.8	14.5	15.5
New York <sup>3</sup> .....	13.7	13.9	14.6	1.50	15.6	15.6	15.7
North Carolina .....	8.6	9.4	9.4	10.3	12.3	11.3	11.4
North Dakota <sup>2, 3</sup> .....					17.6	23.2	22.0
Ohio .....	13.0	14.0	13.8	13.9	14.3	13.4	14.3
Oregon .....	15.5	14.1	18.8	19.6	15.5	14.3	15.4
Pennsylvania .....	10.9	12.4	12.3	12.8	11.7	12.9	12.9
Rhode Island .....	12.2	12.4	15.2	11.2	18.4	12.5	14.3
South Carolina .....	8.2	7.0	7.7	7.7	8.0	8.1	8.5
Tennessee .....	14.1	13.9	13.8	15.6	14.9	13.9	14.1
Utah .....	24.0	22.3	28.6	18.9	25.0	22.4	24.1
Vermont .....	14.2	21.6	18.4	14.8	17.3	19.9	17.3
Virginia .....	8.4	9.8	9.6	10.8	9.9	10.5	10.2
Washington .....	14.6	14.6	17.3	15.6	14.5	13.9	16.1
West Virginia <sup>2</sup> .....						12.1	11.6
Wisconsin .....	14.9	15.5	14.3	14.6	14.6	15.1	15.0
Wyoming .....			18.9	26.4	23.1	29.3	24.2

Figures do not appear on the Chart for the following States:

Arkansas, Nevada, Oklahoma, South Dakota, Texas, New Mexico.

1.—Including District of Columbia.

2.—Not added to registration area until a later date.

3.—Estimated population 1924 based on Federal census 1920 and State census 1925.

\*State law declared unconstitutional.

The above description has been used in treating my last 125 acute appendix cases during the past twenty-three months.

Originality is not claimed. By a process of selection what seemed best has been used.

#### RESULTS

1. Acute appendicitis showing definite plastic exudate without macroscopic perforation: 69 cases, no deaths.
2. Appendices ruptured when first arriving at hospital: 36 cases, 1 death. The death

was in a fulminating case which progressed rapidly to general peritonitis.

3. Localized appendiceal abscesses when first seen: 9 cases, 2 deaths. Both of the deaths occurred in young women who were suffering from influenza. Their abdominal symptoms were first ascribed to "intestinal influenza." The localized abscesses were drained under local anesthesia. Of the remainder, one case developed a subphrenic abscess; an-



other had to have secondary drainage through the vagina. Five of these cases had their appendices removed; four were not disturbed.

4. General peritonitis when first seen: 11 cases, 6 deaths. One of these cases lived forty-one days. She died of inanition.

#### SUMMARY

The principal points to be stressed are:

1. Educate physician and public never to give a cathartic in acute appendicitis.
2. Dehydration and hypochloremia must be overcome before operation, and treated, if necessary, after operation.
3. Gentleness at time of operation is of extreme importance.
4. In pus cases, drainage through a wide open wound gives best results.
5. Use drainage material which will not cause pressure necrosis.
6. General peritonitis is still an unsolved problem.

#### DISCUSSION

DR. K. D. LYNCH, El Paso: I had very extensive training in general surgery before I took up genito-urinary work and I would not want to see Dr. Senger's paper go undiscussed, as he certainly has summed up for us the logical things to do in our present knowledge of appendicitis. It is true, he did not discuss the various types of pathology we get in cases of appendicitis, but did not have time to do so.

Talking about operating on cases and removing the appendix, he said you can always remove the appendix if you want to go that far. I think it is a question with the individual surgeon whether he will go the whole distance or not, in some of the cases where they have been drained and where the patient has gone on and died. Yet, many of these cases, when autopsied, show that one of the reasons for the death was not the appendix, but because the surgeon did not go the whole distance and did not do a complete operation.

Drs. Werley, Waite and a number of others in El Paso, have what they call a Pathological Club, and they go after postmortems. They want to see exactly what the patient died of and it is very interesting, in those cases of appendicitis, to see what might have been the result if the surgeon had just gone a little further. There is no criticism implied on my part, of course, as to the surgeon's handling of these cases, but often, if he will autopsy these cases, he will find that, if he had gone just a little further, he might have been able to save that patient's life. I think if we all go after autopsies, we will know better what to do in some of these individual cases.

DR. SENGER: I might tell Dr. Lynch that the man who never makes an error in diagnosis is the man who never performs an autopsy. We all make mistakes—we do not go far enough in surgery sometimes, and then, unfortunately, sometimes we go too far. The man who does not follow up his deaths with autopsies, however, is the one who never learns. Some of the things we meet at the autopsy table make the cold shivers run up our backs.

DR. E. T. HENSLEY, Portales, N. M.: A very great many of us who live in the small towns do

not have a chance to follow up our deaths with autopsies. I had a case, about three months ago, of unruptured appendix and felt pretty sure it was a case of general peritonitis, with perhaps abscess of liver, but could not get a postmortem. You cannot get postmortems easily with country people.

I heartily endorse the paper of Dr. Senger and also Dr. Lynch's remarks. In regard to abdominal irrigations, we used to get lots of gunshot wounds in Oklahoma. In some of these cases, we used to use normal saline, sewed them up, and they got well. I believe that irrigating a belly where you already have your infection spread all throughout the abdomen, is harmless.

In those cases where we have to wait too long to operate, or where we know the patient is going to die anyway and there is no chance whatever to save him, I believe the surgeon should not operate, as he is only hurting the cause of surgery by so doing.

DR. SENGER (closing): I might have enlarged my paper and gone into the pathology, but did not think I would have the time.

When a man comes to you with a neglected case of perforated appendix, it is a very serious problem. In the first place, you do not want to operate too soon. Wait until you get your fluid balance up to where it belongs and the salt up to where it belongs, and likewise the blood up to where it belongs. You can look at the patient's tongue and see if it is clear and whether it is moist or not; give him 6,000 c.c. of salt solution, and if he is vomiting, he needs more. You can give it to him in the veins; all you have to do is to put a hypo needle in a vein—anybody can do it. It is a very simple matter. I remember Dr. Jackson of Kansas City speaking about these cases. He spoke about some cases going ten days before operating, just filling them up with fluids. If you fill them up full of fluid, you will get better results and they can stand the operation better. Fifteen years ago we were told always to take out the appendix and to be sure and get the appendix, but now it is entirely different.

#### ENDOCERVICITIS

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Colorado Springs, Colo.

(Read before the New Mexico Medical Society, at its Forty-Seventh Annual Meeting, Taos, New Mexico, June 12-14, 1929.)

There is perhaps no more common infectious process calling for observation and treatment than that of the uterine endocervix, called endocervicitis. It is a problem confronting the medical specialist, the surgeon, as well as the gynecologist.

Endocervicitis is one of the most widespread and troublesome conditions. Various writers give the figures as, conservatively, seventy to eighty per cent of women who have borne children or aborted, and seven to twelve per cent of those who have not. The marital state seems to play some part as there are twelve and two tenths per cent of those married having no children against seven and seven tenths per cent of single women (Faulkerson). The age incidence is 33.5 years, proving it is most prevalent at the child-bearing age.

Endocervicitis, or cervicitis, has been known as an entity since the time of Hippocrates. In 1873, Leopold described to the medical world the myometrial lymph course, but this was long after Ambrose Pare and then, later, Oseander, in 1802, had already advocated and done cervical operations. Even then, no serious thought was given diseases of the cervix until the last thirty years. Arnold Sturmdorf, in his great text book, *Gyneococoplasic Technology*, in 1919, was really the one who forced to the attention of medical men the deleterious effect that endocervicitis and its results had on the well-being of women. Now it is sorely neglected by some, unless vitally and professionally interested in the diseases of women. How many realize the distress of the discharge, irritation and pain, the parametritis and other eventualities concomitant with the disease?

C. Jeff. Miller has aptly said, "Any disease which can end as endocervicitis can, in pathology of the upper pelvis, in spontaneous post operative and post partum infections, and which has the potentialities of a transition to malignancy, is indeed a disease to be taken seriously." Welch, in 31,000 cases of cancer collected from literature, found twenty and five-tenths per cent involving the uterus. Therefore, too much stress cannot be laid on eradicating the underlying etiologic factors.

#### ANATOMY AND PATHOLOGY

The cervix develops from the second portion of Mullers duct, originating independently from the uterine body per se. At the junction of the cervix and corpus uteri is the internal os, usually at the depth of one to one and one-half inches. The internal os acts as a sort of sphincter with circular muscle fibers and is more or less a barrier to the invading organisms of the uterus, except, perhaps, the gonococcus. It will be remembered, Winter, in 1888, first described that the uterine endometrium in the normal, is usually free of bacteria. The cervix, with the shape of the canal, the constricting external and internal os, and the ever present mucus plug, is presumably the protecting agent acting jointly with periodic drainage from menstruation.

On the other hand, the basic structure of the cervix peculiarly predisposes this part of the organ to infection. The mucous membrane of the cervix is in small folds radiating from a central line having a sluggish blood supply. It is composed of many deep, complicated racemose glands, with ducts emptying into the cervical canal. Their lining is epithelium of cylindric goblet cells secreting true

mucus. Towards the external os, the ciliated epithelium undergoes transition into the laminated type, which covers the intravaginal portion of the cervix. From the internal os the cells become the corporal endometrium.

It must be remembered here, the primary factor causing the morbidity of any endocervical lesion is infection. Once these glands are infected, there is a tendency to hold the infection for a long period of time, even years.

The glands, become multiple crypts of focal infection, while giving local signs and symptoms, may likewise be the foci which are giving manifestations of a systemic disease. (Dickinson).

Equally important are the lymphatic structures of the uterine body and cervix. These channels may be traced from the cervical mucosa through minute ostia directly to the myometrium supplying each part of the corpus uteri and branching out into the parametrial tissue and broad ligaments.

Trauma and gonorrhea are the predisposing causes of infecting the endocervix. By trauma is meant parturition, pessaries, dilatation and curettage attempts at abortion, poor endocervical treatments and strong chemical douches.

Considering then, the ascending lymphangitis, endocervicitis is a difficult disease to cure by local applications because the infection rarely spreads by continuity of tissue, but rather by the lymph stream, and it is easy to see that, by eradicating the focus in the mucous membrane, little can be done to effect a cure.

When the infection is established from any one of the above causes, the disease furnishes the necessary irritation to continue the process. One of the manifestations of endocervicitis is erosion, eversion, ectropion, or whatever terminology is used. This erosion is a condition of overgrowth of the endometrium of the cervical canal, which nearly always displays a tendency to extend its normal limits on to the vaginal part of the cervix as well as ascending, and, as the columnar epithelium of the canal has none of the opacity of the dense stratified epithelium of the vagina, the affected area of the vaginal part of the cervix has the red, raw, eroded appearance.

#### MICROSCOPICAL

When the cervical endometrium is packed with round cells in the sub-epithelial tissue about the glands, they are stimulated to activity, proliferate and secrete more mucus. They then become distended and the surface covered with a single papillary layer of epithelium healing in projections, closes the



glandular ducts, causing nabothian follicles. These follicles are the round, shot-like bodies felt with the examining finger. The so-called erosion is then akin to abnormal cell formation and there is only a small line of demarcation between the extreme cell proliferation in orderly arrangement of hyper-plastic endocervicitis and the disorderly arrangement of embryonal cells found in a true malignancy of the cervix.

#### ETIOLOGY AND BACTERIOLOGY

Strachan says endocervicitis is essentially inflammatory and when first seen the inflammation is usually chronic, which brings up the fact that some of the first infections of the cervix may be traced back to infancy. It may be hematogenous from one of the acute exanthemata, or even infected with colon from improper care during an attack of diarrhea. Again, in the erosions of the nulliparous and virgins, it may be due to a fetal condition where the gland bearing columnar epithelium is not confined to the cervical canal, but extends on to the portio. Anemia, too, reduces the general health, lowering the acidity of the vagina, allowing the invasion of organisms. Doederlin believes, in the absence of syphilis, tuberculosis, and non-demonstrable bacteria, that, in a chronically inflamed cervix previously normal, the cause is gonorrheal. There may be an infection due to a passive congestion such as exists in intra or extra uterine tumors or to a sub-involution.

In chronic endocervicitis the bacteria encountered, not gonococcal in origin, include those bacteria usually found to follow cervical lacerations. The most common are, streptococci, staphylococci, colon bacillus and pseudodiphtheritic bacilli. Usually the predominant ones are aerobic.

In the presence of inflammation of true chronic endocervicitis, there is an enormous variety of bacteria and the great difficulty is encountered in knowing which are and which are not, pathogenic. Laura Moench, of Rochester, has proven one thing: there is a strong affinity of the cervical streptococci for joint tissues in systemic infection.

Cullen, in his examination of seventy-five cases of cervical discharge, found fourteen different organisms possessing definite cultural characteristics.

#### SYMPTOMATOLOGY

The symptoms of endocervicitis range from leukorrheal discharge to the systemic effects of a focal infection. The great difficulty is that, when the patient reaches the surgeon, she is often complaining of associated or resulting pathological lesions which obscure the original lesion. The usual com-

plaints asserted clinically, though, are anemia, leukorrhea, neuroses, pre-menstrual and co-menstrual pain, backache, dyspareunia, sterility, menorrhagia and metrorrhagia.

The signs on physical examination are equally as obvious. They are, discharge from the external os, mucous or purulent in type. Reddened or purplish lips of the cervix, lacerations, nabothian cysts, or mucous cysts. Granulating or erosion-like areas circumventing or partially surrounding the cervix. These are usually on the anterior or posterior lip. There is also found a posterior cellulitis of the uterosacral ligaments of greater or less degree.

#### DIAGNOSIS

Every case should be examined, where possible, with a speculum and good light. When this is done, even those cases showing little leukorrhea may reveal an extensive degree of erosion or even eversion. Every case, too, should have a bimanual glove examination and the possibility of syphilis and tuberculosis kept in mind.

Cancer of the cervix must be differentiated from cervicitis or endocervicitis and, although the change from the benign to the malignant is not understood, nevertheless, it may be there. It is a simple matter when in doubt, to obtain a curetting or a section for microscopic examination, with a tonsil punch and novocaine.

#### TREATMENT

Care must be used in treating an acute endocervicitis because of the danger in precipitating a pelvic inflammatory process, and the failure to treat an endocervicitis during pregnancy may lead to an unwelcome post-partum infection. If one fails to regard, in acute infections, Skene's glands, no matter what treatment may be used, it will be of no avail.

The treatments for endocervicitis are numerous, but any method will fail unless one considers the anatomy and underlying pathology which the anatomical structures make possible. There is scarcely any branch of surgery where there is such a dire lack of unanimity as the treatment of endocervicitis.

Local applications, such as silver nitrate, fifteen per cent, phenol zinc sulphate, argyrol, mercurochrome, iodine and tampons, help in some cases. But more often, when treatment is stopped, the disease is the same. In the treatment of acute infected cervixes, it is found that, unless local treatment is begun within a few weeks, it is of little value.

It is difficult to understand how a topical drug, antiseptic, or germicide can penetrate several layers of tissue and leave any appre-

cial effect on a lymphangitis or a parametritis.

Ionization, galvanism, and alcohol injections have met with indifferent results. Diathermy, to the general practitioner, means numerous treatments and inaccessibility to a machine. Radium, first used by Curtis in 1920, is difficult to control and often forms scars on the cervix and stenosis unless in expert hands. Vaccines have never been satisfactory.

Out of all the chaotic methods of treatment. Sturmdorf has shown logically and conclusively that there is a cure for endocervicitis. One is his operation and the other Hunner's, cauterization. Sturmdorf's operation was and is a great advent in curing endocervicitis as it removes in a cone the etiological cause, the infected mucosa, without injuring the musculature of the cervix. The operation is accomplished by making a circular incision around the external os outside the eroded area. The mucous membrane cuff is then freed from the cervix and the cylindrical flap separated as far as the internal os. The entire mucous membrane is coned out with a scissors or scalpel as far as the internal os, which leaves undisturbed the underlying musculature. The vaginal cuff is then inverted over the raw edges and sewed in place with any suture of choice.

The end results of the operation are superior to amputation and to trachelorrhaphy, as proved by the figures of the Long Island Hospital compared with those of Howard Kelly's Clinic in Baltimore. In the Long Island Hospital, of 300 cases, sixty-four per cent were cured, twenty-eight per cent improved, eight per cent unimproved. In Kelly's Clinic, sixty-two per cent were cured, thirty per cent improved, seven and one-half per cent unimproved.

There can be no question that the Sturmdorf operation, where operation is in question, is the one of choice. This is true in severe cervical infections and chronic septic types. It removes the focus of infection, leaving the musculature as a protection to the uterus. It does not cause stricture or stenosis. It is comparatively free from loss of blood. It permits post-operative parturition and is often the cure of sterility. Where other surgery is done and in severe cases, it is ideal. But it requires an anesthetic and hospitalization.

Cauterization is done in two ways:

If the patient has an endocervicitis and some abdominal fault to be corrected, such as a fibroid or ovarian cyst, there is no contraindication to taking an anesthetic and cauterizing at the same time, with the ex-

ception that the better technic is not to do vaginal work when the cauterization is done. Theoretically, there is a possibility, if a cystocele or repair of the pelvic floor were done and one had a post-cauterization bleeding, it would be difficult to stop. Further, one does not like to have an infectious discharge pouring over a fresh repair.

The usual technic is as follows: The patient is prepared vaginally and the position of the uterus determined as a matter of drainage. The vagina is scrubbed with gauze and green soap. The vagina and cervix are then painted with some one of the non-inflammable antiseptics. The anterior lip of the cervix is grasped with a single tenaculum and drawn into the speculum and the cervix dilated. A Percy water-cooled speculum is inserted for safety. With an electric cautery at cherry-red, the mucous membrane is cauterized in striae one-half to 1 cm. apart, beginning at the internal os and making the striations in line of the canal. It must be remembered the mucous membrane is from 2 mm. to 5 mm. thick, as a rule, and that too severe cauterization at the external os will cause stenosis. The strips of mucosa left between the striations grow over the cauterized area in six to eight weeks and these strips, strange to say, lose their infection. (Kendig Va. Med. Asso. Dec. 14, 1926). The eversions of the mucous membrane are likewise burned, touching each nabothian follicle. A piece of sterile gauze is usually left against the cervix as a prophylactic hemostatic measure.

In the office treatment, if the patient has a non-sensitive cervix, is partially dilated, not hysterical, and does not possess a conical cervix, then the probability is the operation will be a success.

The patient is put in a lithotomy position, and the vagina and cervix cleansed with a non-inflammable antiseptic. If dilatation is needed, the Peasley dilators are used to enlarge the canal sufficiently. The plug of mucus is removed from the cervix with essence of caroid or an alkaline solution on an applicator and hexylresorcinol inserted into the canal. In a too sensitive cervix, a pledget of ten per cent cocaine or four per cent butyn may be left in the canal for four or five minutes. The cervix is grasped with a volsella and the small nasal cautery inserted. It is controlled by a hand button and when the patient complains of pain it should be released. The pain is due to the muscular contraction of the internal os, or perhaps to the steam generated inside the very sensitive uterus. A number of striae are then made,



beginning at the internal os and drawing the tip of the cautery towards the operator.

This office cauterization may be done in stages, allowing two to three weeks to elapse between treatments. In some cases it can all be done at one sitting.

The patient is warned to expect some slight bleeding, either immediately or when the slough separates. She is instructed, too, to wear a pad for a few days, because the discharge is increased almost immediately. After about seven days, if the whole endocervix has been cauterized at one time, it has a dark gray necrotic appearance and quite some odor. The necrotic material disappears, usually, after two weeks and, as a rule, after the sixth week the discharge ceases. If the odor is too offensive and as a precaution, each day the cervix is painted with four per cent mercurochrome and after the sixth day douches of one-half ounce of soda to two quarts of water may be given daily.

One may expect the case to be entirely well after three months. Cauterization has its dangers, it is true. The spreading of a virulent infection, stenosis of the external os, and, in rare instances, infection; but it is perhaps the safest, best and surest non-operative means of a cure of endocervicitis.

#### SUMMARY

Endocervicitis is an infective process of the cervix usually brought on by trauma or gonorrhea. The pathology must be known to obtain a cure.

It is one of the most potent causes of more serious pelvic infection and of malignancy.

If untreated, it may be the cause of a focal infection.

It can be cured by the Sturmdorf operation and by Hunner cauterization.

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#### DISCUSSION

DR. K. D. LYNCH, El Paso, Texas: I certainly should not like to see Dr. McCrossin's fine paper go undiscussed. He has covered all the points so thoroughly, however, that it is difficult to add anything. We have been employing the procedure described by the Doctor for a long time and it certainly brings about cures in a great number of cases. I think it is really distressing to see a great many women come in who have been treated for long periods with various applications, for, as Dr.

McCrossin said, you cannot get the information to any extent by such treatment; and when the treatment is stopped, the disease is often the same as before. In the office, we have found it an advantage to make a little novocaine injection with a needle at the point where the cervix is grasped by the volsella, and this helps to stop the pain a great deal. Then we also have put in a uterine sound in the cervix itself and get that pretty well anesthetized with cocaine on a swab before we go ahead with the dilatation. Another little instrument that helps and is very satisfactory in these cases is the Post cautery with a long silver tip to it. I think the dilatation preceding cauterization is essential in most of these cases, but there are some cases in which you can insert the Post cautery in the cervix without dilating. Another thing, with the Post cautery, we have not had any hemorrhages. We have seen cases, however, in which the ordinary cautery knife was used in a rather slipshod way—just plunged in, and the cervical canal sometimes cut very deeply. Cauterization like that will make a pretty deep sloughing of tissue, and I have seen some very severe secondary hemorrhages from it. I certainly think a note of warning should be sounded against that procedure.

#### TUMORS IN THE CHEST

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(Read before the Medical and Surgical Association of the Southwest at the fifteenth annual meeting, at Phoenix, Ariz., Nov. 7 to 9, 1929).

The study of intrathoracic tumors is of importance because of the frequency of errors in diagnosis, and the consequent disastrous results to the patients because of improper treatment. Not infrequently patients are encountered who have been sent to the southwest with a diagnosis of asthma or tuberculosis when the symptoms which prompted such a diagnosis were the result of a tumor somewhere in the chest.

The tumors which arise in the thoracic cavity may be divided, with respect to their most frequent origin, into mediastinal and true pulmonary or pleural, the latter including those also arising from the inner wall of the bronchial tubes. The usual classification applied to tumors elsewhere in the body—viz., benign and malignant—applies as well to chest tumors.

Mediastinal tumors are usually seen and a diagnosis made earlier than tumors elsewhere in the chest because they give rise to serious symptoms at an earlier period in their growth. The dyspnea and cough, which are such early and characteristic symptoms of tumor of the mediastinum, are apt to bring the patient quickly to his physician. The x-ray examination reveals that the shadows cast by mediastinal tumors are usually homogenous and dense. They stand out sharply against the surrounding lung and only rarely show evidence of infiltration of the latter. These shadows are nearly always bilateral, especially when they are well grown, and this, in most cases, will

serve to distinguish them from primary tumors of the lung.

Pleural tumors exhibit a varied symptomatology in which the pathognomonic signs of tumors found elsewhere in the body may be lacking. Thus, their remarkably long duration, extending at times over years, and their clinically benign behavior, are at variance with their truly malignant character. Clinically, the absence of cough and other pulmonary symptoms for a long time, aids in distinguishing pleural tumors from those developing in the lung. Pleural effusions are more frequently encountered in pleural tumors than in those in the lung. On the x-ray film the neoplastic thickening of the pleura results in a dense, more or less homogenous shadow which occupies the axillary zone of the chest and radiates toward the hilus, in contrast to the pulmonary tumor, which usually originates in the hilus region and radiates toward the periphery of the lung.

True pulmonary tumors may be classified, for our purpose, into primary and metastatic. Primary lung tumors may also be classified into benign and malignant.

Benign tumors in the lung are extremely rare. They rarely produce symptoms, and grow very slowly. In fact, the diagnostic distinction of a tumor of this type is that Roentgen examinations over a period of time show that it scarcely increases in size at all compared to the usual steady growth of the malignant types.

Of the primary malignant tumors in the lung, far the greater number are carcinomata. Roughly, two forms of these are recognized: one beginning at the root of the lung and progressively involving more of its parenchyma, and a second which has a lobar distribution. The former is the adenocarcinoma which originates as an endobronchial tumor in one of the primary bronchi and spreads by extension through the wall of the bronchus to the adjacent lung. It is probable that dissemination along the peribronchial lymphatics also accounts for a considerable growth of the tumor. Lobar carcinoma, on the other hand, arises extra-bronchially, probably from alveolar epithelium anywhere in the lung; it is a tumor of flat cells which are often of indeterminate type.

Primary sarcoma of the lung is found very infrequently. In fact, it is so uncommon that only some unusual feature of the case warrants its diagnosis. It is not unlikely that some of the cases of primary sarcoma which have been reported were in reality tumors which originated in the mediastinum and secondarily involved the lung. The early

incidence of sarcomata, the majority of which are found before the age of 40, may have some value in distinguishing them from epithelial tumors.

Primary tumors in various organs so frequently occasion metastases in the lungs that the Roentgen examination of the latter is endowed with an unusual importance in that the clinician is thereby enabled not only to discover metastases which elude his physical examination, but he is also afforded decisive, though indirect, evidence as to the nature of disease elsewhere in the body.

In respect to their pathology, we have to do, practically, with three kinds of metastatic tumors: namely, carcinoma, sarcoma, and hypernephroma. Metastatic sarcoma of the lung is, in a large proportion of cases, secondary to tumors of the bones; whereas, metastatic carcinomata result most frequently from primary tumors in the gastro-intestinal tract or in the breast.

For this classification and description of chest tumors I am indebted to the excellent volume by Drs. Wessler and Jaches of New York.

The diagnosis of intrathoracic tumors is not infrequently a matter of considerable difficulty. The two conditions in which the most difficulty in differential diagnosis is encountered, are tuberculosis and asthma, and it is sometimes impossible to make a positive diagnosis until the case comes to autopsy.

An afternoon rise in temperature to 99.2 to 100, a gradual loss in weight and strength, a frank hemoptysis or blood-streaked sputum, are frequently found in malignant tumor of the lung as well as in pulmonary tuberculosis, especially in young adults. Cough, with or without expectoration, dyspnea and chest pain, are also rather common symptoms in chest tumors.

The following suggestions may be found helpful in making a diagnosis:

1. The personal history, especially as to previous operations, particularly amputations of limbs, breast amputations, operations on the gastrointestinal tract, and on the genito-urinary system, or for the removal of new growths from any part of the body, is of importance because of the frequency of metastasis in the lungs.

2. Symptoms: While in many cases the symptoms caused by the presence of chest tumors simulate very closely those of tuberculosis and asthma, namely, dyspnea and cough and sometimes the extensive bronchial rales and squeaks which are heard in the latter disease, the symptoms in asthma are likely to be more spasmodic. Frequently the asthmatic is, for a time, entirely free of



symptoms, whereas the symptoms produced by tumors, which are largely due to pressure, are persistent and usually gradually increase in severity. The pain in tumors is usually more persistent and usually increases as the tumor grows; whereas, in tuberculosis, the chest pain, which is usually due to pleurisy, is apt to be remittent. The cough resulting from tumors is more of the brassy and croupous and unproductive type, in contrast to that in tuberculosis. The hemorrhage in tumors is more often small, rather on the order of blood-streaked sputum, except in the advanced stage when degeneration and caseation have resulted, and the blood in tumors is likely to be dark in color, whereas hemorrhages in tuberculosis are frequently frank from the outset and the blood is usually light in color. The dyspnea in tumors is usually much more marked in proportion to other symptoms pointing to disease in the chest, than it is in tuberculosis or asthma. Weakness is often noted early in tumors of the lung and appears to be out of proportion to other symptoms and physical signs; whereas, in tuberculosis, it comes on rather insidiously and is not marked until late in the disease. Cachexia and anemia also seem to appear earlier in chest tumors than in tuberculosis.

3. Physical signs: The physical signs in malignant tumors are, as a rule, very indefinite as compared with the extent of the disease. They vary, of course, according to the size and location of the growth, and the amount of involvement of the air passages, with the accompanying secondary changes. Inspection often shows impairment of motion on one side of the chest, more marked than it would be in tuberculosis, and, in many cases, distention of the superficial veins on the side in which the tumor is located, or on both sides, where it is in the mediastinum, and sometimes edema of the neck and face are seen. Marked enlargement of the supraclavicular and axillary lymph glands, especially if the enlargement has been rapid, should suggest tumors rather than tuberculosis. The percussion note may vary from normal over small tumors, to flatness over airless lung, or dulness or flatness over those that have extended to the chest wall. If the tumor is central, whatever change there is in the percussion note will be due to change in the air content of the overlying lung. Sometimes the variation in the note from that obtained over the surrounding uninvolvement region is not enough to be detectable. Auscultation may find the breath sounds to be greatly diminished or absent. A partial occlusion of a bronchus by a tumor may give rise to a peculiar amphoric breath sound called

ed cornage, which sign is very suggestive of bronchial carcinoma. Absence of breath sounds, especially if accompanied with flatness on percussion, may be due to pleural effusion. Hemorrhagic effusion should at once suggest the possibility of malignancy. Such effusion may also contain cancer cells.

4. Roentgenograms of the chest are of great value, and, in fact, are almost indispensable in the diagnosis of intrathoracic tumors. No examination for diagnostic purposes can be considered complete without stereoroentgenograms of the chest, and in obscure cases, where antero-posterior plates do not clear the diagnosis, lateral skiagrams should be made.

In arriving at a diagnosis, use should be made of the history, the symptoms, and the physical signs, together with the carefully made fluoroscopic and x-ray study.

The early diagnosis of tumors in the chest may be greatly facilitated if surgeons will advise periodic Roentgen examinations of the chest where they have removed new growths from any part of the body, but especially the breast and gastro-intestinal tract.

#### CASE REPORTS

Case No. 1: Mrs. M., age 55, family history irrelevant.

Personal History: Had scarlet fever at age of 22. Had pneumonia 20 years ago. Had severe attack of tonsillitis several years ago. About ten years ago had a small tumor removed from shoulder. The operating surgeon reports it a lipoma. Since then has enjoyed good health until about three months ago, when she developed a cough. Was examined in a clinic and told her heart was four inches out of line. Later, another physician made a diagnosis of tuberculosis of the lungs, and laboratory reported positive sputum. Referred to us, April, 1929.

Chief Complaint: Cough with slight expectoration, moderate dyspnea and slight afternoon fever.

Physical Examination: Patient's general appearance was good, except that the appearance of the skin was not good—slight cachexia.

Chest Examination: showed marked dulness on percussion, lower two-thirds of left lung, with no air entering the lung below the 4th rib. There was hyperresonance at the extreme apex. In the right lung a few moist rales were heard at the apex.

X-ray films showed a dense shadow filling the whole of the left side from the 3rd rib to the base.

Several sputum tests were made, but all were negative for tubercle bacilli.

Patient had several slight attacks of coma, preceded by headache, lasting usually but a few hours, but on June 21st went into a coma, accompanied by convulsions, and died on June 22nd, 1929.

At autopsy, a large growth, occupying almost all of the left side of the chest was found, with the left lung compressed upward almost to the apex. There were some adhesions from the growth to the chest wall, and it was attached by a definite pedicle to the diaphragm, from which it derived

its blood supply. Microscopic examination showed the tumor to be a spindle-cell sarcoma.

The cause of death was given as malignant tumor of the chest, with probable metastasis to the brain.

Permission was not given by the family to open the skull.

Case No. 2: Mrs. B., age 47, family history irrelevant.

Personal History: Had typhoid fever ten years ago. Pleurisy with effusion three years ago. Aspiration showed fluid serous. Has not felt well since. Six years ago had bilateral salpingectomy, and oophorectomy was done, but no pathological report could be obtained describing the pelvic condition.

Chief Complaint: For more than a year she has suffered with dyspnea and cough, both gradually increasing until, for several weeks, she had been unable to sleep or eat with comfort.

She was referred to us for diagnosis on July 12th, 1929. Had been previously told she had tuberculosis.

Upon arrival, she was so weak she could not allow a very careful examination, but atelectasis of the left lung was evident. She was very anemic and had an afternoon rise of temperature to 99-2/5.

X-ray films were made with some difficulty, but they showed the mediastinum with all of its contents, together with the heart, drawn quite well to the left side, and the lung collapsed.

Attempted bronchoscopic examination produced marked cyanosis, and during x-ray examination she suffered attack of syncope.

Patient died on July 21st.

Autopsy showed an occlusion of the left bronchus by carcinomatous growth beginning in the main bronchus. The mediastinal glands and those in the upper abdomen, were greatly enlarged, some as large as a hen's egg.

The pathologist reported the growth to be primary carcinoma arising from the bronchial mucosa, and, secondarily, involving the mediastinal and upper abdominal lymph glands.

## EVAPORATED MILK IN INFANT FEEDING

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(Read before the Pecos Valley Medical Association, at their annual meeting, held at Roswell, N.M., Oct. 12, 1929).

When one surveys the subject of infant feeding, he can not help but be amazed at the time and energy that has been spent on the subject, and yet, it is probably less understood by the general practitioner than any subject that he has to consider.

Formerly, he was expected to memorize a lot of formulas on cream mixtures, top-milk mixtures, skim-milk mixtures and so forth, until he became so confused that he gave up in despair, and decided that the best thing for him to do would be to keep a few sample cans of prepared baby food and pass them out, with the accompanying directions, whenever the occasion demanded.

Now, it is not my intention to belittle the prepared baby foods. Some of the newer preparations are excellent foods, based on

scientific principles, and have been life savers to countless infants, but they are not "cure-alls" and he who uses them as such will, sooner or later get into trouble, and, besides he is doing his part in driving the public to obtain their baby foods and feeding directions from druggists and grocers, who are quick to recognize the commercial value of such an enterprise. These preparations are expensive and it is difficult to obtain them in the smaller towns.

The subject of infant feeding has been revolutionized within the past few years. It has become more scientific but less complicated. We use fewer and simpler formulas, based upon rational requirements.

There are four things to be considered in the selection of an infant food:

1. It must contain the caloric value;
2. It must be properly balanced as to protein, carbohydrates, mineral salts and vitamins;
3. It must be free from harmful bacteria;
4. It must be digestible.

The first requirement, "caloric values," treats of the amount of food necessary to sustain life and to promote the natural growth and development of the child. Scientific investigation has discovered that the average well baby needs, for the first year of life, about fifty calories per pound of body weight, for each twenty-four hour period. Take, for example, a normal child weighing ten pounds. This child should have a total food value, for a twenty-four period, equal to ten times fifty, or 500 calories. We know that every ounce of cow's milk contains approximately twenty calories, and every ounce of sugar contains approximately 120 calories, so, with this knowledge, we are able to make a formula that will meet the caloric needs of any child.

The second requirement is that the food must be properly balanced. It must contain a sufficient amount of protein, carbohydrate, mineral salts and vitamins, A, B, C and D.

The protein may be supplied from cow's milk, and the formula will contain sufficient protein if we include in this at least one and one-half ounces of milk for each pound of body weight for the twenty-four hours. Let us take our former example of the ten-pound baby. Ten one and one-half ounces would equal fifteen ounces of milk. Since this is a minimum requirement, I usually add about three more ounces of milk to make up for waste or what the baby may not take.

It is now necessary to add some carbohydrate in the form of sugar. We shall again figure for the ten-pound baby. Under our first requirement, or caloric needs, we found



that the baby needed 500 calories. Now we have added our eighteen ounces of milk, which gives us 360 calories; then, we will need, in carbohydrate, the difference between 500 and 360, which is 140 calories. Figuring on a basis of 120 calories to the ounce, we have one and one-tenth ounces of sugar. Making the same allowances that we did in figuring the milk, it would be safer to add one and one-half ounces of sugar to our formula. This brings up our caloric value to 540, which is forty calories in excess of the minimum requirement.

If we put this baby on a four-hour schedule, he will have five feedings. We have about eighteen ounces of milk and sugar to divide into five feedings, which will give us a little over three ounces at each feeding. This will probably not be enough fluid for the average ten-pound baby, so we should add to the formula about four ounces of water. This will give the baby about four ounces of fluid at each feeding. If he requires more fluid than this, add more water. If he fails to gain sufficient weight, then reduce your water and add a little more milk and sugar.

This formula will contain a sufficient amount of mineral salts to supply the baby for the first six months of life. After that time, his needs are greater and this demand should be supplied through green vegetable soups. I treat my breast-fed babies in the same way.

The vitamins are an essential element in the baby's diet. A and D are the fat-soluble vitamins and B and C are the water soluble vitamins. The formula under consideration, like breast milk, will contain sufficient vitamins A and B but not enough of vitamins C and D. The lack of vitamin C will produce scurvy and a deficiency in vitamin D will produce rickets. The deficiency in vitamin C may be overcome by feeding the baby one or two tablespoonfuls of orange or tomato juice daily, and of vitamin D by one or two teaspoonfuls of cod liver oil two or three times daily.

In this section of the country, where we have so much sun light and our babies are out in the fresh air and exposed to the indirect rays of the sun, we do not feel the need of cod liver oil nearly so much as they do in climates where there is more damp, cloudy weather, and especially is this true of some of our larger cities, where sunlight and fresh air are at a premium.

Now we come to No. 3—a very important item in the selection of a baby food. "It must be free from harmful bacteria."

Those of you who are familiar with the

manner in which milk is handled on most of our farms and ranches, know that it is not a fit food for adults and much less for infants. In many places, the cows lie down in filthy corrals and stables, contaminating their udders with manure. The udders are not washed before milking, neither does the milker wash his hands. In some places, the cow is milked while the calf sucks, and, where this is practiced, it is impossible to keep the calf slobbers, with a generous proportion of flies and manure, from dropping into the milk bucket. Now we can not make such milk clean, but we can make it fairly safe for infant consumption by boiling it. Boiling the milk brings about some changes, which we shall consider later.

The fourth and last consideration in the selection of a food, is that it must be digestible for the baby. The normal baby is quite active and grows and develops quite rapidly. To meet these needs it is necessary that the digestive system work pretty nearly to the full capacity. This can be accomplished by feeding only such foods as are easily and quickly digested. In taking the histories of my babies, one of the first questions that I ask the mother is, "What do you feed the baby?" If the baby is over three or four months old, the usual answer is, "We give it a little of everything that we have to eat."

For the past year, I have fed my babies on unsweetened condensed milk. I began this after reading the reports of the Saint Louis Childrens' Hospital. I shall quote the opening paragraph of one of their recent reports:

"For a number of years past, unsweetened evaporated milk has been used in this clinic for the preparation of infant feeding formulas and good results have been obtained. Originally, this form of milk was used chiefly for the feeding of patients who were returning to homes in districts where the milk supply was of questionable purity, or in the case of patients who were traveling or going to summer resorts. Later, the use of evaporated milk was extended to the poorer and more ignorant dispensary class of patients where it was felt that the mothers were not sufficiently intelligent to be trusted to sterilize formulas properly or did not have the facilities for the refrigeration of bottled milk. The results, even under adverse conditions, were so generally satisfactory that we have been led to make a much more extensive use of evaporated milk for the preparation of formulas for both well and sick infants of all classes."

"In the light of our experience it is difficult to understand why evaporated milk

has not been more extensively used in infant feeding. It would appear that an uncritical prejudice has been the chief factor in the limitation of its use."

Unsweetened evaporated milk is a non-proprietary distribution form of whole cow's milk of standardized and legally controlled composition. It differs from ordinary bottled milk in that it is sterilized instead of pasteurized, is marketed in sealed cans instead of bottles and is concentrated by removal of approximately sixty per cent of the water, by evaporation in a partial vacuum. The product is also homogenized, which breaks up the fat globules into smaller particles.

As evaporated milk has an interstate distribution, it is subject to Federal inspection and regulation under the Food and Drug Act.

The constancy of composition thus insured is an advantage from the standpoint of the construction of infant feeding formulas. Furthermore, cream does not separate from evaporated milk, as it does from fresh milk, so that all portions of the milk from the container have the same fat element.

Evaporated milk is sterilized by autoclaving at a temperature of from 200 to 240 degrees F. This makes it a safe food from the standpoint of bacterial contamination. The heating of the milk brings about certain changes in the physico-chemical properties. The casein is altered by heating so that, when it is treated by rennin or lactic acid, a much finer curd is formed than is possible with raw, pasteurized, or quickly boiled milk. A large tough curd can not form in the stomach from the use of evaporated milk. The change in the casein is due in part to the heating and in part to the process of homogenization, or a breaking up of the fat globules, to which the evaporated milk is subjected. There are good reasons for supposing that a fine curd is desirable in infant feeding.

Evaporated milk has, when diluted with equal parts of water, a caloric value equal to that of fresh milk.

The protein and carbohydrate elements of the milk are unchanged during the process of evaporation. There is, however, a slight precipitation of calcium phosphate as a result of heating; but, as cow's milk contains about three times as much calcium phosphate as breast milk, it is of no consequence if a small amount is precipitated.

The fat soluble vitamins A and D are fairly stable to heat and do not deteriorate on standing, so that we should expect the same proportions in evaporated milk that we find in fresh milk.

Vitamine B is now recognized as being composed of two elements: the first, or antineuritic, and the second, or growth-producing, element. The antineuritic element is unstable when subjected to heat, especially if it is in an alkaline solution, but is not destroyed when heated to high temperatures if in a slightly acid medium, and, since milk is slightly acid in its reaction, we should expect it to be unimpaired in evaporated milk. Cow's milk contains about four times as much of this antineuritic factor as breast milk, so that we may rest assured that any slight change in chemical reaction will be compensated in the excess amount. The second, or growth-producing element, is remarkably stable to heat and there is no evidence that this factor is decreased in evaporated milk as compared with natural cow's milk.

Vitamine C is, perhaps, the most unstable vitamine that we find in milk, and, when the milk is heated, a considerable amount of this vitamine is lost. The amount of this antiscorbutic vitamine is variable in fresh cow's milk and is not to be depended upon to protect against scurvy. It may be assumed, therefore, that evaporated milk contains only a small amount of the vitamine C and, when used as a basis for infant feeding, it should be supplemented with orange or tomato juice.

The safety of evaporated milk from a bacteriological standpoint is, I believe, beyond question, and is a factor that makes it a very practical food and one that should very soon become quite popular with both the profession and the laity.

I believe evaporated milk to be more easily digested than fresh cow's milk because the tough curds are broken down and the fat globules have been separated by the heat treatment so that they are more easily subjected to the action of the gastric juices.

Evaporated milk is a non-proprietary product. It is inexpensive. It has a wide distribution, and is more convenient than fresh cow's milk in the construction of feeding formulas.

In conclusion, I should like to emphasize the fact that evaporated milk meets all four of our food requirements:

1. It contains the same caloric value as its equivalent in fresh cow's milk.
2. It is a properly balanced food containing the necessary protein, carbohydrate, when combined with sugar, mineral salts and vitamins with the exception of vitamine C, which is variable in fresh milk, and which may be supplied by the feeding of orange and tomato juice.
3. It is free from harmful bacteria.
4. It is digestible.



## CHRONIC ENDOCERVICITIS

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(Read before the Pecos Valley Medical Association, at their annual meeting, held at Roswell, N.M. Oct. 12, 1929).

Chronic endocervicitis may be defined as a chronic inflammation of the cervical mucosa and the adjacent tissue.

### ETIOLOGY

Chronic endocervicitis follows acute endocervicitis, although the symptoms at the time may be so slight as to escape notice. As to cause, chronic endocervicitis may be divided into two classes: Gonorrheal and septic.

The first type is more often seen in women who have had no children, although it is also seen in multiparous women. Second type is seen more often in the multiparous women and is the result of trauma produced during labor, in the majority of cases. This trauma is more rarely produced by: (1) excessive coitus; (2) foreign bodies; as tumors, polypi, pessaries, etc.; (3) unclean fingers or instruments; (4) strong chemicals. Owing to the constant presence in the vicinity of the cervix of pathogenic bacteria, infection takes place easily, following trauma.

### PATHOLOGY

The infecting organisms penetrate the mucosa, affecting the glandular and interglandular tissue, causing round cell and lymphocytic infiltration. There is increased secretion on the part of the cervical glands, this secretion is irritating and sometimes causes erosion. After a variable length of time, the cervix becomes enlarged, chronically congested and everted. If laceration and eversion were previously present, these are increased. The mucous membrane may become thickened irregularly from papillary growths. If the external os is too small to admit free drainage, the secretions may become locked up within the cervix, producing ulceration in the vicinity of the internal os. The gland ducts may become obstructed, causing the glands to become retention cysts which may be felt as hard nodules on the cervix. These cysts may be so numerous as to produce a condition known as cystic degeneration of the cervix. They may contain pus and will appear as yellow spots on the cervix. One, or a group, of these cysts may project into the cervical canal, become pedunculate and form polypi. If cervical inflammation is long continued, the connective tissue proliferation and later contraction may cause the other tissue elements to disappear and the cervix passes into a condition of cirrhosis. The long continued irritation

of chronic endocervicitis is undoubtedly a factor in the production of cancer.

Infection in the cervix may, at any time, ascend to the endometrium, or may extend downward and involve the structures of the lower genital tract. The infective organisms may be carried from this focus to distant organs, as the heart, kidneys, or joints, and these set up active inflammation.

### SYMPTOMS

The most prominent symptom is a persistent copious leukorrhea. Associated with this may be backache, headache, dragging pains in the pelvis, and nervousness ranging all the way, up to hysteria.

These symptoms may be due to concomitant pelvic disease, as chronic endocervicitis is not usually found alone. Occasionally, however, no other pelvic pathology is found and it is then said that the symptoms are due to reflex disturbances excited by the infected cervix.

### DIAGNOSIS

The diagnosis is made by the history and by inspection of the cervix. There may be some doubt in cases accompanied by much surrounding induration and bleeding on manipulation. In these cases, a section should be removed and sent to a competent pathologist for microscopic examination, to exclude the possibility of malignancy.

### TREATMENT

Treatment of endocervicitis may be divided into medical and surgical.

Medical treatment includes all except the actual cautery and the excision and repair of extensive laceration. The latter, which produces so much disability for so long a time, is used only in cases of extensive laceration and resultant scar tissue formation. I am using the actual cautery, which requires an anesthetic and some days in bed, on only those cases which are resistant to all medical treatment.

Many drugs have been used in the treatment of endocervicitis; the silver preparations, mercurochrome, acriflavine and phenol being probably the most important ones. The chief difficulty in the use of these drugs has been in reaching the seat of infection in the cervical glands. To overcome this, I have recently adopted the injection method advocated by Helvestine and Farmer, using an aqueous solution of mercurochrome which is less irritating than any of the other antiseptic agents used in the treatment of endocervicitis.

### TECHNIC

The cervix is brought into view with a bivalve speculum, seized with a tenaculum for-

ceps, to steady it, and the vagina and cervical canal are swabbed free of discharge. For the injection, a metal or glass syringe with an extension, as in throat work, is best. Five-eighths inch, twenty-five gage needle is used. In their series of cases, Helvestine and Farmer used a two per cent aqueous solution of mercurochrome, but in my cases a four per cent solution was found to produce no untoward results and, as the germicidal power is much greater, it has been used. The needle of the syringe is inserted at the junction of the mucosa and stroma, the point being kept toward the mucosa, as no pain is felt unless the needle enters the stroma. Injections into the cervix are made at the four points of the compass, the needle being passed into the mucosa up to the hilt and a few drops injected, then the needle is slowly withdrawn with a few drops injected along its entire course, until one-half a cubic centimeter is injected at each of the four points, a total of two cubic centimeters at each treatment.

Helvestine and Farmer used only one-half to three-fourths cubic centimeter at each treatment, but, by using the larger quantity I feel that the certainty of the mercurochrome penetrating to all points between the injections is much greater. These injections are made at weekly intervals, subsequent injections being made between the points formerly injected.

In conjunction with this, all cysts are punctured and allowed to drain; the cervical canal is kept widely open so as to facilitate free drainage. A routine douche of some mild antiseptic, as one to six thousand potassium permanganate, is prescribed, either daily or bi-daily, depending on the amount of discharge.

In cases of erosion, I also cauterize the eroded area with twenty per cent silver nitrate, at the weekly treatment.

The general hygienic condition of the patient is improved as much as possible and tonics are prescribed when indicated. This method of treatment causes little or no pain at the time of injection and only a transient sense of fullness in the pelvis afterward, which passes off in three or four hours. In none of the cases reported has abscess formation, necrosis or any other untoward result, followed this method of treatment.

Helvestine and Farmer<sup>3</sup> treated, by this method, a total of thirty cases, all of which were markedly improved. Four of this series were of gonococcal origin and required the longest number of treatments, or eighteen. Another series of six cases of nonspecific

origin, which showed no laceration, required the least number of treatments, or six.

I have treated only six cases by this method. The oldest two cases have had six treatments each and are both about ready to be discharged as cured. In none of these six cases was the gonococcus found, though smears were made and a search instituted in each case. Rapid improvement had been noted in all of the cases after as much as two treatments, the erosion, the eversion and leukorrhea disappearing rapidly. Even in cases complicated by pelvic disease, the symptoms referable to the pelvis have been decreased after the cervical treatment. The headache has been greatly improved in every instance.

I have treated by this method no case of endocervicitis where extensive laceration was present, as I believe the treatment of choice to be surgery in these cases. However, Helvestine and Farmer have treated some of these cases, which have refused operation, and report marked improvement in all of them.

#### CONCLUSIONS

1. Endocervicitis is a frequent lesion, especially in women who have had children, and is frequently overlooked and neglected.

2. The injection method is preferable to the simple topical applications, because it reaches the seat of infection, whereas simple application of the drug to the canal does not.

3. The injection method is preferable to the actual cautery or surgery where laceration is not extensive, because it is simple of execution and does not produce the long period of disability and pain of the cautery or of excision and repair.

4. Results are quickly obtained by this method and these results are reflected in a great improvement of the patients' general health as well as in amelioration of the local symptoms associated with this disease.

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3. HELVESTINE & FARMER. *American Journal Obs. and Gyn.*; volume seventeen; July, 1929; pages 68-72.



## Diagnostic Forum

### CASE OF SUDDEN COLLAPSE ON EXCESSIVELY HOT DAY; DEATH AFTER TWENTY-FOUR HOURS IN COMA

(Based on Case 15312, Case Records of Massachusetts General Hospital, New Eng. Jour. of Med., Aug. 1, 1929, p. 231).

#### CASE HISTORY

A Swedish carpenter of forty-seven went to work on June 7 feeling as well as usual. It was an extremely hot day, the official temperature being 94 degrees in the shade. The patient was engaged in working on the outside of a house and was in the sun most of the time. About noon time he suddenly felt weak and dizzy and was forced to sit down. In a few minutes he vomited. He had to be assisted home a few blocks distant and was put to bed. The local doctor was called at once and found him to be in a state of collapse. He was still conscious but very weak and bathed in cold perspiration. His mouth temperature was 94 degrees and his blood pressure 90 systolic and 50 diastolic. The pulse was observed to be weak and irregular but slow.

In the evening he became somewhat stuporous, and during the night passed into gradually deepening coma. The next morning he could not be roused. Frequent observations of temperature and pulse were made by the nurse, his temperature remaining subnormal and his pulse 80 to 90 until nine o'clock in the morning, when his temperature suddenly went up to 104 and his pulse to 150.

He had always been a strong, robust man. His family could remember no serious illnesses. He was married and had two healthy grown children.

Examination at quarter past twelve p. m., June 8 showed a large muscular middle-aged man obviously moribund, very cyanotic, in deep coma. The breathing was stertorous, shallow, and slow. Turning his head on one side freed the air passages sufficiently so that cyanosis disappeared from the face. It remained however in the fingers. The skin felt very hot. It was neither moist nor very dry. The temperature one hour before examination was 104; the pulse 160, regular, the respirations 16, the blood pressure 142/80. The pupils were equal, slightly irregular; no reactions could be obtained. Fundi: the disc margins appeared slightly blurred; the vessels appeared normal; no hemorrhage or exudate. Mouth negative. Thyroid and glands normal. Heart normal in size, action very rapid but regular, sounds of good quality, no murmurs. Lungs, no dullness. The breath sounds were obscured by the stertorous breathing. Abdomen negative except for dullness extending three inches above the pubic bone, thought to be due to a distended bladder. Reflexes: knee jerks and other reflexes were not obtainable. No response on plantar stimulation.

Laboratory data. Urine: high colored, clear, specific gravity 1.034, albumin 0.10 per cent (equals a slight trace), sugar—1.5 per cent, sediment negative; diacetic acid, slight reaction; acetone moderate reaction. Blood: hemoglobin 90 per cent, reds 5,880,000, leukocytes 18,000; non-protein nitrogen 37 milligrams per 100 cubic centimeters; carbon dioxide combining power 32 volumes per cent. Wassermann negative.

While the patient was being catheterized to obtain a specimen the respiration stopped. Brief artificial respiration was employed, after which a few spontaneous irregular respirations occurred. The

heart continued to beat for several minutes after respiration ceased. Death occurred about five minutes to one p. m.

At the regular meeting of the Yavapai County Medical Society, held on Nov. 26th, the following discussions of this case were given:

#### DR. ROBERT S. FLINN

This case report is short, clear-cut and definite. A healthy middle aged man, who has always been in good health, is suddenly stricken while working out of doors on an exceedingly hot day in June. He becomes dizzy and weak and vomits. He soon passes into coma and dies twenty-four hours later. Examination a short time before death shows a moribund man with slow shallow respirations. The physical examination is essentially negative except for the reflexes which cannot be elicited.

Probably the commonest cause of coma of this variety is some sort of cerebral accident. Cerebral hemorrhage usually causes unilateral paralysis except in rare instances where the hemorrhage is in the pons. We should also consider some heart condition such as coronary thrombosis. However, I feel that we have little evidence for either cerebral hemorrhage or a coronary accident.

The laboratory data are extremely interesting. The urine is highly colored with a specific gravity of 1.034, a slight trace of albumin, 1.5 per cent sugar with diacetic acid and acetone. The sediment is negative.

In considering whether or not this patient is suffering from diabetes mellitus, it is well to refresh our memory with regard to the causes of sugar in the urine. By sugar one usually means glucose. It is to be remembered that certain substances other than glucose have the power of reducing the copper salts to produce the characteristic Benedict or Fehling reaction. Lactose, levulose and pentose are the most important of these substances. But glycuronic acid, uric acid, hippuric acid, xanthin and alcapton also produce a reaction that may lead to error. Where there is any doubt as to the identity of the reducing substance, a fermentation test, together with the phenylhydrazine test, should be carried out. Yeast will ferment glucose to produce carbon dioxide, while phenylhydrazine and glucose produce phenylglucosazone crystals.

The presence of glucose in the urine does not necessarily make the diagnosis of diabetes mellitus certain. One must bear in mind that there are many causes, other than diabetes, for sugar in the urine. Severe physical strain often produces a temporary glycosuria, while we are all familiar with the so-called emotional glycosuria seen in severe nervous fatigue. Cerebral injury, acute alcoholism, hyperthyroidism, hepatic diseases, acromegaly, pregnancy, lactation and excessive carbohydrate intake are a number of causes of temporary or persistent glycosuria. One frequently sees cases of persistent glycosuria in which symptoms of diabetes are lacking. Restriction of carbohydrate intake fails to alter the glycosuria appreciably. Blood sugar tests show a normal carbohydrate metabolism. These are cases of so-called renal glycosuria in which there is presumably a lowered threshold for sugar in the kidney. In cirrhosis of the liver, persistent glycosuria is apt to occur, due to the inability of the liver cells to store glycogen. In cases of hyperthyroidism, glycosuria is not infrequently found. This is due no doubt to a hyperactive sympathetic nervous system and an increased glycogenolysis of the hepatic glycogen.

Turning to the case in question, we see that in addition to sugar in the urine, there is definite amount of acetone. You will remember that acidosis is common in diabetes, due to the fact that there is incomplete combustion of the fatty acids with the accumulation of the ketone bodies in the blood. Under ordinary circumstances, sugar in the urine plus acetone, is sufficient for a diagnosis of diabetes mellitus. However, glycosuria is sometimes seen in cases of heat prostration, and acetone in the urine after severe vomiting or starvation. In this case, we have other evidence in favor of diabetes; the carbon dioxide combining power of the blood plasma is 32 volumes percent. Normally carbon dioxide is present in our blood in chemical combination as sodium bicarbonate, and in physical solution as carbonic acid. By far the larger part is held in the former state. When organic or inorganic acids are produced in excess, they have to be converted into salts for their excretion by the kidney. Accordingly base is necessary and the body draws upon its main reservoir, namely sodium, which is held as sodium bicarbonate. Thus, from the chemical union, water and carbon dioxide are formed and the latter is lost through the expired air. By determining the ability of the blood to absorb carbon dioxide, we obtain what is called the carbon dioxide capacity of the blood. Normally the carbon dioxide power of the plasma is 50 to 65 volumes per cent, and 32 volumes per cent indicates moderately severe acidosis. Blood sugar determination would be extremely helpful in this case.

In favor of a diagnosis of diabetes, we have the presence of sugar and acetone in the urine and a moderately severe acidosis as shown by the carbon dioxide combining power. On the other hand, this patient gives no history of diabetes. It is also to be remembered that diabetes produces no typical pathological picture, and Dr. Mallory is apt to report the pancreas as being normal.

Assuming, if you will, that this patient has diabetes, are we justified in explaining his coma on the basis of diabetic acidosis? I think not. The onset of diabetic coma is usually very gradual, with certain prodromal symptoms such as headache, anorexia, and epigastric pain. The onset of drowsiness is gradual; the breath has the odor of acetone; evidences of marked dehydration are often present. There is usually a very low blood pressure and the intra-ocular tension is low so that the eyeballs are soft and yielding. The Kussmaul or air hunger type of breathing is characteristically deep and usually rapid.

We do not think this is a case of diabetic acidosis and we must attribute the coma and death to other causes. These causes will be discussed by my colleague.

#### DR. W. E. McWhirt

This is an exceedingly interesting case. In our years of discussing Cabot cases I don't remember a similar case being brought to our attention. The previous speaker has gone into the laboratory findings in detail.

The four outstanding things in the case are sudden onset, the profound shock, subnormal temperature and low blood pressure.

In heat exhaustion we find such a picture as we have here. In considering heat exhaustion it is necessary to take up the mechanism of the heat control of the body. Heat is produced in the muscles and a small quantity in the abdominal viscera; heat is eliminated through the skin largely, and to a lesser extent through the lungs. The balance is maintained by the center in the brain and if anything should happen to the mechanism of either

production or elimination, we would have just such a picture as in this case. The causes are numerous. One of the outstanding ones is alcohol. In the Philippine Islands, where we would naturally expect to find heat exhaustion with the high temperature and humidity, of 164 cases quoted it was found that in practically all of them alcohol played a part. Various diseases that debilitate the body also may play a part. In this particular case there is no history of alcoholism or of disease. In certain cases no cause can be found.

While this man was working in the sun, this plays no part in heat exhaustion, as practically as many cases occur in patients who are not in the sun.

The onset of heat exhaustion, or heat stroke, is sudden, although there may be prodromal symptoms for a day or so, such as malaise, headache, nausea, vomiting and diarrhea.

On first examination, the blood pressure was low (90/50) which is one of the outstanding findings in heat exhaustion, although the exact opposite may be true. The temperature is subnormal, (94°F); again you may have the opposite, depending upon the amount of trauma to the body.

There are certain complications which occur in heat exhaustion, which however, play no part in this case because he did not live long enough. They are disturbances of speech, certain muscle spasms, disorientation, and the greatest complication, if they live long enough, is pneumonia.

Quoting from Tice: "Several types have been described but there seems to be little reason for a division into clinical types, since it is a single cause, and since the apparently different forms vary only in degree of disturbance, rather than origin. It is not uncommon, moreover, for a case to be first seen as the less severely injured type in which a high temperature later develops. It is, however, true that cases tend to fall into two classes. In one, which has been described as heat exhaustion, the onset is more gradual and prodromal symptoms are always present; the temperature is seldom above 101° (38.33°C.) and frequently normal or subnormal; the pulse is small and easily compressed; the patient is usually conscious; recovery is frequently prolonged, but is complete and with no sequelae. The second type has been described as heat stroke. The temperature rises to extreme heights, unconsciousness with convulsions is common, and few or no prodromata have been noticed; the pulse is rapid but of fair volume; respirations are often of the Cheyne-Stokes type, and recovery or death usually ensues within a few hours or days. With this type sequelae have been commonly noted. It seems probable that the difference is largely one of degree, or that the individual who has rendered himself more susceptible, by errors of diet, or alcoholic excess, presents the most violent picture."

Sunstroke, insolation, sonnenstich, calenture, ictus solis, thermic fever, siriasis, heat apoplexy, heat asphyxia, heat stroke, heat prostration are some of the symptoms.

Our diagnosis in this case is Heat Exhaustion or Heat Stroke.

At the weekly meeting of the Clinical Club of Phoenix, on Nov. 25th, the following diagnostic discussions of this case were given:

#### DR. R. J. STROUD

This case is interesting because there are certain factors which have to be taken into consideration before making a diagnosis of sunstroke as the cause of death.



Briefly: Male, aged 49, carpenter, Swede, working in the sun at 94 degrees in the shade, and presumably in a humid atmosphere. Noontime he felt weak, sat down, vomited, had to be assisted home and collapse intervened. Conscious, very weak, cold perspiration, subnormal temp. by mouth, as low as 94. B.P. 90/50. Pulse weak irregular, but slow. Later he was stuporous, gradually deepening coma. Sudden rise of temp. to 104 and pulse to 150 from 90 at 9 a. m. and death some time in the afternoon.

Examination later shows a blood pressure of 142/80, pulse 160, resp. 16. pupils slightly irregular and equal, disc margins of fundus blurred.

Urine shows trace albumin and 1.5 sugar and acidosis. Red cell count shows polycythemia leucocytes 18,000. Heart continued to beat after respiration ceased.

This was not a cardiac death, nor was it due to brain hemorrhage, for the pupils were equal and no other sign was present that was mentioned.

Acidosis and diabetes must be considered even if the case came on suddenly in a supposedly healthy man. We have positive urinary findings to establish such a diagnosis, and yet the amount of sugar is not excessive and the rapidity of death would make us look to some other factor besides diabetes. The blood pressure picture in the first few hours (90/50) looks like diabetic but could come from any shock. The later rise of blood pressure militates against diabetic death. Breathing was shallow and not of the Kussmaul type until just before death.

There are two general types of sun stroke or heat stroke. (1). One in which there is a very sudden rise of temp. to 106, or better with hot, dry skin like a stove. Death by hyperpyrexia. (2) Subnormal temperature type with low blood pressure and shock, with later a rise in temp. or not. There is also an intermediary type showing most of the classical symptoms except that temp. is more or less normal.

With the type presented, or any type, temperatures over 87 in humid atmospheres especially with sun exposure, still air, alcoholism or undue labor in the hot part of the day are causative factors. The tendency of the "white man" to work excessively under all conditions makes them more prone to have the disease. The afternoon "siesta" really beginning at 10 a. m. and lasting until evening in peoples of tropical countries is not all laziness, but just a commonsense measure. In India through the great deltas white troops are warned about this, since deaths in the past have convinced officers that it was necessary. Here in this climate it is not always conceded that heat is a factor, but I have personally seen many of both types.

One of the features of sun stroke is that of loss of reflexes, as seen in this case, and this is not strictly characteristic here as loss of reflexes is also one of the symptoms of diabetic coma. In cases of heat stroke with recovery, recurrence may take place until the reflexes return. No mention is made of abdominal cramps, which come on later, but this patient was in coma probably before this could take place. The early vomiting is also a more or less prominent symptom of sunstroke.

Sunstroke does not give a brain lesion as a rule; generally there is a very slight meningitis, but the predominant thing is a congestion of the lungs with laking in the cells, together with passive congestion of the liver and kidneys. The excess red count could come from this laking of the serous elements of the blood in the lungs.

There is no apparent disturbance of the kidneys. The carbon dioxide combining power of 32 per cent

shows a moderate acidosis. As a rule death in diabetic coma results when the combining power is below 30, and yet 32 is very much below normal.

Were it not for the sudden rise of temp. and the recorded high blood pressure, diabetic coma could very easily be the entire cause of death. It is possible that the added heat is a factor in producing the diabetic coma in an otherwise healthy man who showed no former symptoms of diabetes, which is not rare.

I lean to the heat factor as the primary cause of death and diabetes secondary with passive congestion of lungs, liver and kidneys.

#### DR. FRANK J. MILLOY

This is a definite case of heat exhaustion. The onset with weakness and dizziness and vomiting, passing into a state of collapse with marked subnormal temperature, fall in blood pressure and cold perspiration coming on in a healthy man who has been subjected to severe physical exercise on a very hot, humid day, is a typical history and exactly what you would expect to find in heat prostration. The extreme change in body temperature from 94 to 104 demonstrates the loss of balance of the heat regulating center. That is the physiological explanation of heat prostration.

If this patient had any organic trouble prior to this sickness there is nothing in his history or physical examination to suggest it. The fact that the heart continued beating for five minutes after death proves that it was not a cardiac death. The respiration of 16 eliminates respiratory involvement of an infectious nature. The leukocyte count of 18,000 fits in with heat prostration.

The postmortem findings will probably show an acute passive congestion or hypermia of the brain and lungs, and there will probably be cloudy swellings of the liver, kidneys and myocardium.

The discussions at the Massachusetts General Hospital on this case were as follows:

#### DR. JAMES H. TOWNSEND

The chief interest in this case centers about the cause of the sudden collapse and coma and its relation to the sugar and acetone bodies in the urine. Clinically the patient did not present the picture of diabetic coma. There was no hyperpnea such as is present in diabetic coma almost up to the last breath. The patient's mouth and skin were not excessively dry. The eyeballs were not soft. Furthermore, it would be very unusual for diabetic coma in an adult to come on so suddenly without any previous warning symptoms. When we examine the laboratory data closely and note that the blood sugar was only 200 milligrams per 100 cubic centimeters and the carbon dioxide combining power was reduced only to 32 volumes per cent, I think we must conclude that diabetic coma was not the cause of the death. While there was some degree of acidosis and of hyperglycemia the changes were not of the degree found in coma.

If the death was not a diabetic one, then what lesion will explain the symptoms and the laboratory findings? Could "heat prostration" or "insolation" have been responsible for the whole thing? It was one of the hottest days of the season, and the patient had been working in the sun. The clinical picture of collapse, with low blood pressure, low temperature, and feeble irregular pulse is certainly consistent with the description of one form of insolation described in the text books, and I think it is entirely possible to account for his symptoms on this basis. The terminal rise of temperature can be

attributed to a disturbance of the heat regulating center without any bacterial invasion being present. There may have been a terminal septicemia. The hyperglycemia could be due to cerebral injury of the type found in injury in the neighborhood of the fourth ventricle, and the acidosis could be due to vomiting and starvation. It is however unusual for a strong man of this age to die of heat prostration. Post-mortem examinations have usually demonstrated some other pathology.

Could this patient have died a cardiac death? The picture certainly does not correspond with the congestive type of heart failure, but does resemble to some extent the picture found in coronary thrombosis. The collapse, vomiting, low blood pressure, profuse perspiration and weak irregular pulse could all be accounted for on this basis. It would be very unusual however to find a patient with coronary thrombosis growing worse while his blood pressure was rising to 140 millimeters. In this condition a rising blood pressure corresponds with an improvement in the general condition. Furthermore, there was no history of pain and no evidence of traeriosclerosis.

A cerebral lesion of some sort must be considered the most likely diagnosis. This could be a hemorrhage in some part not giving localized paralysis, or it might be due to a tumor. Such sudden changes often represent hemorrhage into a tumor. The hyperglycemia can be accounted for on the basis of cerebral injury. The blurring of the optic discs also fits well with this diagnosis. The terminal rise of temperature may be a part of the picture. Whether the heat of the day had anything to do with the situation is difficult to say. Possible it might have a precipitation cause.

#### CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD).

Cerebral hemorrhage.  
Possibly heat prostration.

#### DR. TRACY B. MALLORY ANATOMIC DIAGNOSIS

Acute cerebellar hemorrhage.  
Arteriosclerosis.

Post-mortem examination showed that the essential lesion was a hemorrhage and softening in the posterior third of the left cerebellar lobe. For a fresh hemorrhage the area was unusually sharply limited and there was no infiltration of blood into the subarachnoid space. The right lobe of the cerebellum showed a slight pressure cone as evidence that it had been forced part way into the foramen magnum by increase of the cerebrospinal pressure beneath the tentorium. The meninges were clear and the larger vessels shed no marked degree of arteriosclerosis.

Microscopic examination showed the usual appearances of fresh hemorrhage and softening and confirmed the gross impression that no tumor was present. On the borders of the lesion and also in other parts of the brain an occasional small artery showed a perivascular collection of lymphocytes. The other organs were essentially negative except for the left coronary artery, where a calcified plaque was found which considerably narrowed but did not occlude the vessel.

## TWO AND A HALF MONTHS' VOMITING AT AGE OF SIXTY-TWO

(Case 15231, Case Records of the Massachusetts General Hospital, New Eng. Jour. of Med., June 6, 1929, p. 1211).

### CASE HISTORY

An American watchmaker sixty-two years old entered December 28. The chief complaint was almost constant nausea with occasional vomiting for about two and a half months.

From the age of eight he had indigestion,—pain in the epigastrium beginning an hour and a half after meals and relieved by soda or food. Later on the symptoms increased, with nausea relieved by washing the stomach. Sixteen years before admission an x-ray examination showed nearly complete obstruction at the pylorus. Operation showed obstruction. A gastro-enterostomy completely relieved his symptoms. Seven months before admission he vomited bright red blood. He became unconscious and remained stuporous for twenty-four hours. For the following week his stools were black. For a month after the hemorrhage his body felt numb and his mind was cloudy. For six weeks his legs were swollen. He improved enough to return to work and even gained six pounds, but continued to have nausea at intervals. Since the attack he had had frequency of urination five or six times a day and once or twice at night. Two months and a half before admission the nausea became marked and persistent. Twice he vomited nothing but "bile." A month later he noticed light stools and slight yellowness of the skin. For five weeks his feet and legs had been swollen and his feet numb, especially by day. For three weeks his prepuce was swollen. He had lost thirty-five pounds.

His father died at seventy of "galloping consumption." The patient was exposed. His mother died of cancer of the stomach. A brother died of perforated gastric ulcer.

The patient had scarlet fever, typhoid fever and possibly rheumatic fever in childhood.

Clinical examination showed an emaciated man. Many carious teeth. Marked pyorrhea. Tonsils large and injected. A few enlarged left axillary glands and numerous cervical glands,  $\frac{1}{4}$  to  $\frac{1}{2}$  inch in diameter. Heart not enlarged. Sounds and action normal. Pulmonic second sound slightly accentuated. A soft systolic murmur at the apex. Radials and brachials only slightly sclerotic. Blood pressure 120/80. Lungs clear. Abdomen distended, tympanic. Masses in both lower quadrants, small rounded tumor over which the outer portion of the abdominal wall was freely movable. Liver enlarged; edge felt. Moderate edema of the legs. Rectal examination showed numerous irregular soft masses around the rectal wall which felt like folds of mucous membrane. No indurated masses could be felt, but the rectal wall was definitely abnormal. Pupils and reflexes normal.

Amount of urine not recorded, specific gravity 1.030, the slightest possible trace of albumin at the single examination, sediment not remarkable. Blood: 16,800 to 16,000 leukocytes, 60 per cent polymorphonuclears, hemoglobin 75 per cent, reds 4,750,000, slight anisocytosis. Smear otherwise normal. Hinton negative. Nonprotein nitrogen 32 to 40.

Before operation chart not remarkable except for a temperature of 99.° the day of admission.

The patient had nausea throughout the day on December 30. That night he began to complain of severe sharp constant epigastric and upper abdominal pain, more marked on the left. An enema was given with gas and fecal results. He belched a good



deal of gas. A large doughy irregular mass was first noticed in the left upper quadrant that night. The following day the pain continued. Six or eight times vomiting was induced, always with relief.

December 31 operation was done. That night the patient died.

At the Nov. 26th meeting of the Yavapai County Medical Society, held in Prescott, the following discussions of this case were presented:

#### DR. CLARK B. DIVINE

The presenting symptom in this case is undoubtedly the severe nausea and vomiting that existed for two and a half months prior to admission to hospital.

The causes of vomiting can be divided into two great classes: neurotic and organic. Neurotic vomiting includes the largest number, more than any other type of vomiting, or all of them put together. There are certain individuals who are able to vomit almost any time; if they have a little distress below the sternum, a finger in the throat or not, and they are able to vomit. There are others who will vomit because they get sympathy. This includes the great class of gastric neuroses. Under the organic type we have four great heads: cerebral, pharyngeal, vomiting in the gastric crises of tabes, and the gastrointestinal type.

Cerebral vomiting is, as you know, apt to be due to irritation of the brain or meninges, and is projectile in type. It comes on suddenly without very much nausea. Probably also included in this type, is the reflex vomiting and the vomiting due to great pain or emotional stress; also the vomiting that occurs in certain toxemias like the toxemia of pregnancy.

Pharyngeal vomiting includes most of the vomiting due to drinking and smoking; and some of the vomiting in tuberculosis, due to irritation of the pharynx, constant hocking and clearing of the throat.

The cause of vomiting in tabes has not been very well worked out.

The gastrointestinal type I have left to the last purposely because I think we can exclude the others mentioned as not concerned in our case. Aside from the acute appendix, acute and chronic gastritis and the thousand and one things that cause vomiting from the gastrointestinal tract, there is one cause I want to draw your attention to particularly, and that is obstruction. Obstruction may be either acute or chronic, it may be accompanied by peritonitis or not, but obstruction of the bowel causes an intense and constant vomiting. In neoplasm in the stomach or gastrointestinal tract, the symptoms and signs are practically the same. You have gastric stasis, hypomotility and achlorhydria in either one. So unless there are other things present, you can not make a distinction between the two types. We really should have gastrointestinal x-ray here, but we have no report of such.

This patient got along all right after a gastroenterostomy for a period of sixteen years. He undoubtedly had gastric ulcer at first, and then, suddenly, about seven months before admission to hospital, something else broke loose and he vomited blood. He probably vomited quite a lot of blood because he was unconscious afterwards, for twenty-four hours stuporous and after that for a month his mind was cloudy; for a week his stools were black from the blood he had passed, so that he must have had quite a big hemorrhage.

Where did that hemorrhage come from? We

know, or believe, that he had an ulcer and we also know that five to ten per cent of ulcers become malignant. We also know that in cases of gastroenterostomy, the site of the wound produced often becomes malignant.

Further along in the history it says that he became yellow and the stools were light colored. That might have been due to increased size of the pylorus pressing on the common duct, or head of the pancreas pressing on the duct. Often at the same time there are varices at the junction of the esophagus and stomach which are liable to rupture and cause hemorrhage.

We know that something did happen at this time that caused a profound change in the patient's condition.

#### DR. C. E. YOUNT

This American watchmaker, 62 years of age, whom we believe to have died of abdominal carcinomatosis, presents at least five points of special interest:

1. Family history,
2. A "dyspeptic" from childhood,
3. A dyspeptic child, in adult life, develops or reveals pyloric stenosis at the age of forty-six,
4. A gastro-enterostomy gives complete relief from obstructive symptoms for fifteen and a half years.
5. In the terminal stage of an abdominal carcinomatosis, an operation is performed to relieve intestinal obstruction.

1. THE FAMILY HISTORY: This patient has a childhood exposure to tuberculosis, his father having died of "galloping consumption" at the age of seventy. Surely seventy is a ripe old age for miliary tuberculosis, for while it may occur at any age period, it is far more common in early life than later. In the majority of cases in which the disease does occur in adults, the patient is known to have a chronic pulmonary lesion or to have been subject to a chronic cough. This childhood exposure to tuberculosis may be briefly summarized as follows: "That tubercular infection occurs after and not before birth is an undoubted fact, subject to few exceptions. The opportunities for acquiring the disease when it exists in family members are manifold. The children born into tuberculous families seem to possess tissues peculiarly vulnerable, and often show the delicacy of physique and deficiency in chest capacity associated with a pretuberculous state." A practical evaluation of this exposure is seen in the Life Insurance Actuary's rule, "An applicant's liability to tuberculosis varies inversely as the ratio of healthy to infected family members"—(Green, Osler & McCrae.)

His mother died of cancer of the stomach. There are many cancer research students who place little credence in inherited predisposition to cancer. But, be that as it may, the actuaries of our big Life Insurance Companies all, without exception, continue to require an answer to this question of each prospective applicant for a life insurance policy. Life insurance, then, which is based on "life expectancy," evaluates inherited predisposition to cancer and childhood exposure to tuberculosis with scientific exactness in which "the dollar" is not an unknown factor to be represented in the insurance equation by X.

A brother died of a perforated gastric ulcer. This gives us a mother and two brothers with serious gastric lesions and would seem to bear out the point which I have tried to make concerning heredity; that certain families of individuals are predisposed to acute and chronic gastric conditions.

2. A DYSPEPTIC FROM CHILDHOOD: That rare diagnostician and teacher, the late Sir William Osler, pays his respects to this type of case in these words, "The term chronic dyspepsia should not be despised. It may be that after some time even functional disturbances lead to pathological changes in the gastro mucous membrane." Our history does not take us back to infancy in considering the origin of his stomach trouble, and yet we picture him as one of those cases of congenital pyloric stenosis which did not result fatally in infancy. Whether this condition often gives trouble in later life can not be definitely stated. The hypertrophy is certainly very slow in disappearing. A tumor has been found at autopsy in children dying of intercurrent disease as long as six months after recovery from all symptoms. (Holt). However, our history starts with our patient at the age of eight years—"From the age of eight he had indigestion, pain in the epigastrium beginning an hour and a half after meals and relieved by soda or food." Let us pause for a moment to consider the possible diagnoses at this point: chronic gastritis, ulcer of the stomach, duodenal ulcer, pyloric obstruction. We know that chronic gastric indigestion complicates many of the constitutional diseases of childhood, especially rickets, syphilis, tuberculosis and malnutrition. The most constant symptom, according to Holt, is vomiting, which may occur regularly after meals or only in the morning before breakfast. Ulcer of the stomach, Holt classifies under four heads:

1. Ulcers of the newborn,
2. Ulcers resulting from acute gastritis,
3. Tuberculous ulcers, and
4. Simple perforating ulcers.

All of these are rare. In 119 autopsies on tuberculous cases, five gastric ulcers were found but only three of these were tuberculous. Gastric ulcer in infancy and childhood often goes undiagnosed unless there is hemorrhage or a post mortem examination. But the fact remains that the prognosis is bad in all forms of ulcer of the stomach.

Duodenal ulcer was formerly considered rare in infancy and early childhood, but now, with better diagnostic methods, they are more often recognized, and their ratio of frequency to gastric ulcer has been placed as ten to one (Eintz). In over one-third of the recorded cases no symptoms suggestive of the condition were present. The only definite symptom pointing to duodenal ulcer is hemorrhage. Blood may be vomited or passed in the stools. In 64 cases of ulcer reported with good histories, bloody stools were observed in 26, bloody vomit in 10, and both in 6. The prognosis of duodenal ulcer at present is very bad. The finding of healed ulcers at autopsy proves that recovery does sometimes take place, but it must be considered rare.

I have pictured this case as one of congenital pyloric stenosis and was glad to find an article by Burrill B. Crohn of New York (J.A.M.A. Jan. 21, 1928) reporting a case of congenital pyloric stenosis in adult life; vomiting was the chief symptom. Not only did she recall no time or period in her life when vomiting was absent, but she was told by her mother that throughout her infancy vomiting had been a prominent symptom.

Mayo-Robson and Moynihan mention a case of a boy eleven years of age who had suffered from infancy with abdominal distention, pain and copious vomiting. At operation the typical, concentric, thickened ring of hypertrophy round the pylorus was found, about a finger-breadth, without any cicatrix or other adhesions that could arouse suspicion of a preceding inflammation. The surgical treatment is either by the Fredet-Rammstedt operation

or a gastro-enterostomy. But Alfred Brown of Omaha (Annals of Surgery, Oct. 1929), makes this very good point in favor of the Fredet-Rammstedt operation; in congenital hypertrophic pyloric stenosis, the strongest argument in favor of surgical intervention, even in mild cases, is the permanence of the tumor when treated by other methods. That it is permanent is demonstrated in three ways: (1) Wollstein has shown that in cases which have died under medical treatment there is no change in the tumor and that gastro-enterostomy, "though it relieves the symptoms and results in a clinical cure, has no effect on the tumor at the pylorus which remains unchanged. (2) Oliver reports a case in an adult of fifty-one years in whom a typical tumor was found and the patient recovered after a Rammstedt operation. Strachauer reports a similar case in a young man of twenty-one years with recovery after a similar operation. Cantley and Dent, Maylard, Landerer and Russel have also found tumors of the pylorus in adults which they believed to be congenital. (3) Histologically, the tumor may undergo more or less fibrous change and thus tend to increase the amount of constriction as shown in one of Brown's cases.

3. A DYSPEPTIC CHILD IN ADULT LIFE DEVELOPS OR REVEALS PYLORIC STENOSIS AT FORTY-SIX YEARS OF AGE: From the age of eight years to forty-six years the only history we have is that the symptoms increased, with nausea relieved by washing the stomach. Here are thirty-eight years of dyspepsia in which all the symptoms are increased and the nausea relieved by gastric lavage. This picture would be a classic of pyloric obstruction if something had been recorded concerning a dilated stomach. We believe that if the records of the operation are found, the stomach will have been shown dilated. The x-ray is positive for nearly complete obstruction at the pylorus. The operation showed the obstruction and the gastro-enterostomy completely relieved this symptom of thirty-eight years' duration. What caused the pyloric obstruction? This may be a case of congenital pyloric stenosis resulting in hypertrophic stenosis of the pylorus at forty-six. It may be due to an ulcer located near the pylorus, either peptic or duodenal, with marked hyperplasia. It may be one of the benign tumors, polypi, angioma, fibroma. It could hardly have been a cancer at the pylorus because the symptoms were relieved by gastro-enterostomy for fifteen and a half years, and even the slowest growing of all the gastric cancers, linitis plastica, would hardly have been thirty-eight years in developing, and then be held in abeyance for another fifteen and a half years by a gastro-enterostomy. Eusterman and Sentry, in describing benign tumors of the pylorus, mention two myomas in men aged sixty-six and forty-four respectively. Both had marked myomatous hypertrophy involving more or less of the entire pyloric ring, and presenting a palpable tumor. Both patients had distressing gastric symptoms over a long period, in many respects simulating gastric ulcer. Of further clinical diagnostic importance is the fact that these benign tumors may cause complications such as pyloric obstruction, intussusception of stomach into duodenum, recurring severe gastro-enteric hemorrhage, strangulation, severe colic and malignant degeneration and even perforation.

4. A GASTRO-ENTEROSTOMY GIVES FREEDOM FROM OBSTRUCTIVE SYMPTOMS FOR FIFTEEN AND A HALF YEARS: Balfour makes a curious observation to the effect that "twelve years ago insurance actuaries showed that in three thousand patients who had been operated on for



duodenal ulcer, the life expectancy was actually better than that of the general population group of the same age and sex." Our patient could well be cited as coming under the benefits of operation, but up to this time we have not proven the rationale of the "cure." Was it because an obstruction *per-se* was relieved of its mechanical effect, or was there an added factor, the gastric juice is no longer "squirted" on the duodenal ulcer? Dr. Charles Mayo says that he believes the primary cause of ulcers of the stomach is acid. Next he looked on them more and more as having to do with the sympathetic nervous system, and that brings us to this thought: Surgery is so rapidly capitalizing the success of physiological experiments upon the nervous system that the average medical man doing surgery can scarcely keep abreast of the literature, let alone master the technic of its new operations. We have phrenico-exeresis for its salutary effect on many pulmonary conditions; cervical sympathectomy for angina pectoris; sympathetic ganglionectomy and trunk resection for the treatment of chronic arthritis; periarterial sympathectomy for endarteritis obliterans, and finally, as suggested by Crile and performed by Drs. Charles Mayo, Schiassi, Leriche and others, cutting of the left (right) vagus in the abdomen, or cutting the sympathetic nerve supply about the pylorus to "de-Kentacize," relieving the patient of his accelerating mechanism. Mayo finds that by cutting the nerves in the human being he has caused reduction of acidity.

Finally, after fifteen and a half years, the picture changes very abruptly. Did the gastro-enterostomy ultimately fail, or has a new condition, a malignancy, engrafted itself either upon the pyloric stenosis, the gastro-enterostomy suture line, or has it an entirely new origin? Of malignancy there is no doubt in the minds of our group. Its possible origin we approach with due circumspection.

The new symptoms are first a massive hemorrhage seven months before admission to hospital, or at the age of sixty-one. He vomits bright red blood, becomes unconscious and remains stuporous for twenty-four hours. For the following week his stools are black. For the next month his body felt numb and his mind was cloudy. For six weeks his legs were swollen. This was followed by slight general improvement but the nausea continued.

Considering the least important symptoms first, —unconsciousness, stupor, body numb for a month and mind cloudy; massive hemorrhage causing a condition of severe sudden anemia could cause this condition. We have seen a case of massive hemorrhage in this hospital in which the patient was in a condition of extremis for three or four days, had mental cloudiness and disorientation, not due to sedatives.

There was also increased frequency in urination since the attack. Tracing this down, we can assign no particular importance to it as there are no other symptoms suggestive of prostatic obstruction or malignancy in prostate. From our viewpoint, the hemorrhage is very important but also confusing. A "dyspeptic" is forty-three and a half years affected before this symptom manifests itself, and it is the only hemorrhage. What is its source and how do we evaluate it in our case? We will use Balfour's classification of hematemesis to show the factors which must be considered in arriving at a conclusion:

Intragastric conditions: ulcer, cancer, syphilis, tuberculosis, hemorrhagic erosions, gastritis in various forms, benign tumors (polypi, angiomas, fibromas),

linitis plastica, foreign bodies, operations on the stomach, caustics, aneurism.

Extragastric causes are: duodenal ulcer, diseases of the liver (cirrhosis in various forms), disease of the biliary duct (obstruction from stone, carcinoma, or stricture), diseases of the spleen (splenic anemia, leukemia, hemolytic jaundice), diseases of the gall bladder, pancreas, appendix, small or large intestines, cardiac and pulmonary disease, lesions of the mouth, nose, pharynx or esophagus, nephritis, disordered conditions of the blood, cholemia, chlorosis, purpura, melena neonatorum, hemophilia, acute febrile diseases, hypertension, external trauma.

With the blood picture before us, 16,800 to 16,000 leukocytes, 60 per cent polymorphonuclears, hemoglobin 75, 4,750,000 reds, we rule out the leukemias and blood dyscrasias. The failure of the hemorrhage to recur during the remaining seven months of his life, in spite of continued vomiting and almost constant nausea, suggests that if it was due to an eroded vessel or ulcerated area in the primae via, that there should have been other and more severe hemorrhages. Instead, we have bile vomited twice, stools light, and slight yellowness of the skin. It is probable that our hemorrhage, when it occurred, was extragastric and we think of cancer of the head of the pancreas or about the gall bladder or duodenum as causing the jaundice, light stools and edema of the legs, prepuce and rectum.

At this time I would like to digress to discuss some of the end results in gastro-enterostomy. Since Wolfer performed the first anterior gastro-enterostomy in 1881, the literature has been replete with discussions concerning the technic of gastro-enterostomy, especially with reference to the anatomical location of the stoma in relation to the stomach and jejunum, and the type of suture and suture material to be used. In the earlier operations, linen and silk being non-absorbable, were responsible for sloughs, hemorrhage and the occurrence of ulcers in the suture line. Today some surgeons are using catgut to the mucosa and muscularis, and linen or silk to the serosa. Others use catgut throughout. Catgut to the mucosa is discarded by Finney in his pyloroplasties because he found as many as 25 per cent recurrence of ulcer. He tried to trace cases accurately. The recurrence was along suture lines. He now sutures the peritoneal and muscular coats of the stomach, catching the vessels of the submucosa, and when the duodenum is reached, the whole wall is caught in the suture. Balfour states that, "It is most important for example, that trauma, particularly to mucosa of the stomach and jejunum, be reduced to a minimum. I am convinced that some recurrences can be attributed to devitalization of mucosa near the line of anastomosis. A second principle is that a radical change should be made in the type of gastro-enteric anastomosis. A third principle involves the use of a jejunostomy tube for feeding in cases in which the lines of anastomosis have been difficult to establish. A fourth principle is that such patients must realize that every possible contributory factor to the tendency to recurrence should be eliminated. Tobacco and alcohol should be prohibited; foci of infection should be eradicated (our patient had infected tonsils and pyorrhea); a most meticulous dietary regimen should be maintained, and proper adjustment of bodily activity and relaxation should be made. The maxim of such patients should be: 'Alternate rest and labor—long endurance'". (Annals of Surgery, October, 1929, page 537.)

Back in 1921 Balfour stated: "There is one certain fact, namely, that no operation for gastric ulcer will absolutely assure a patient that he will not

die of gastric cancer." Cancer has been known to develop during a seven year period in 33 of 799 cases of gastric ulcer in which operation was performed in the Mayo clinic. Eiselburg estimates four percent of cancers develop in gastric ulcers for which gastro-enterostomy alone was done; and Coffee says we have more cancers when the ulcer is excised; then Broders tells us that 50 per cent of benign ulcer specimens restudied after death of the patient from cancer of the stomach, showed "cancer" in the original ulcer, after painstaking search.

Applying some of the foregoing studies to our case, we find a bad heredity pointing to the stomach. The pylorus almost completely occluded as shown by x-ray study and corroborated at operation. The gastro-enterostomy is a "cure" for fifteen and a half years. Abdominal carcinomatosis is, we believe present and should have had its primary origin either in the pyloric region or the gastro-enterostomy suture line. But we have had only one hemorrhage and that seven months before admission; there is no palpable tumor in the region of the duodenum or stomach; the liver is enlarged, its edge fout; nausea and vomiting are again the chief symptoms, to which is added positive evidence of obstruction to the circulation within the abdomen. Are we dealing with primary extra-gastric malignancy? If we maintain that position, we must disregard the influence of heredity and the x-ray and operative evidence already clearly set before us. We believe the prostate as a primary source of cancer is out of the picture. The rectal examination, while very incomplete, is to us suggestive of edema of its mucosa rather than malignancy. A primary cancer of the rectum would have many positive symptoms in seven months where metastases were as great as in our case. Hodgkins disease, the leukemias and nephroma are ruled out, we believe, by the laboratory data presented. We have not ruled out syphilis, which could cause many of the symptoms presented, but we have no reason to question a negative Wassermann.

Tuberculous peritonitis: Again heredity must be considered. He has had a definite childhood exposure. He has had a hemorrhage which, while we do not believe it came from his lungs, has as yet not been located as to source. Tuberculous peritonitis with ascites may simulate gastric cancer with secondary peritoneal involvement. However, it occurs usually in younger subjects, runs a more protracted course, with exacerbations and remissions, and is accompanied by more persistent irregular fever. No occult bleedings occur. However, in tuberculosis of the gastro-intestinal tract, which is often associated with tuberculosis of the lymph nodes and the peritoneum, there may be hemorrhage. The distended, tympanic abdomen, with small round tumors over which the outer portion of the abdominal wall was freely movable, and masses in both lower quadrants, together with enlarged axillary and cervical glands, could be tubercular, and we have seen just such a case within the past year come to operation and post mortem, with a diagnosis of cancer, when the true condition was tuberculous peritonitis. But the preponderance of evidence is against such an interpretation in our case, and it was not noted at the gastro-enterostomy operation, or rather was not so recorded in the history.

5. IN THE TERMINAL STAGE OF AN ABDOMINAL CARCINOMATOSIS, AN OPERATION IS PERFORMED TO RELIEVE INTESTINAL OBSTRUCTION: The patient had nausea throughout the day of Dec. 30th. There is no mention of blood or coffee grounds vomitus. An enema was

given followed by gas and fecal results, but no tarry stools or blood are recorded. Instead, severe, sharp, constant epigastric and upper abdominal pain, more marked on the left, is noted. This is followed that evening by the appearance of a large doughy irregular mass in the upper left quadrant. The pain continues unabated, he is operated Dec. 31st, and died that night. Our group believes that intestinal obstruction has occurred, but whether due to volvulus, intussusception or metastatic growth, we do not know. The operation may have relieved the obstruction, but the patient died.

Our diagnosis: 1. Pyloric obstruction, possibly congenital.

2. Primary cancer within the abdomen, its exact origin undetermined, probably at the gastro-enterostomy suture line.

3. Intestinal obstruction.

The Clinical Club of Phoenix, at their weekly meeting of November 25th, presented the following discussions of this case:

#### DR. HOWELL RANDOLPH

The essential pathology in this case centers about the stomach. The early symptoms present are those of gradually developing obstruction of the pylorus due probably to ulcer in that region. Recurrent epigastric pain relieved by soda or food, when considered in the light of subsequent developments, point quite definitely to such a conclusion. This man was evidently presented with fifteen additional years of life by gastro-enterostomy. It would seem that this period might have been prolonged even more, if he had been under careful medical supervision, and if the septic foci in the mouth and throat had been removed.

The extreme collapse occurring seven months before death was undoubtedly the effect of exsanguination by hemorrhage from an ulceration, probably located at the margin of the gastro-enterostomy opening. From that time on, signs of obstruction to the opening progressed. The loss of thirty-five pounds might have been due to the development of malignant disease primarily, but the relatively high hemoglobin and red count make starvation due to obstruction more likely.

In the absence of cardiorenal disease, the edema and numbness of the lower extremities and prepuce indicate obstruction to the venous return, probably above the origin of the spermatic and renal veins. The absence of superficial dilated veins might indicate an associated arterial obstruction.

The cervical adenopathy and multiple abdominal tumors, with low grade fever, and leucocytosis, make one think of a possible Hodgkins disease, although this is very unlikely. The enlarged glands are explained by teeth and tonsillar infection. Leucocytosis and fever are commonly present in malignancy.

About ten per cent of gastric ulcers develop into carcinoma. Well over fifty per cent of carcinomata of the stomach originated in ulcers (Mayo reports indicate that nearly 100 per cent develop from ulcers) although it is not infrequent to have a cancer progress to an advanced stage before sufficiently severe symptoms develop to bring the patient to a doctor.

Age, hereditary predisposition, and chronic irritation are certainly for malignant growth of the stomach in this case.

DIAGNOSIS, Carcinoma of the stomach with ulceration, causing obstruction of the gastro-enterostomy opening and obstruction to the circulation of the lower extremity. Gravity metastasis to the peri-



toneum of the pelvic region, which may be sufficiently large to cause the obstruction.

The following discussions of this case were given at the Massachusetts General Hospital.

#### DR. RICHARD C. CABOT

The introductory paragraph makes us think of cancer of the stomach as a snap diagnosis.

He certainly began young with his symptoms.

That operation sixteen years ago could not have been for obstruction by cancer, because he could hardly have lived so long since then. There is only one other thing that the pylorus could have been obstructed by, so I shall change the diagnosis at that period to ulcer.

When that gastro-enterostomy was done they had a good chance to look into the stomach. He lived sixteen years after that, so I think there is no considerable question that he had a gastric ulcer sixteen years ago.

His body feeling numb and his mind cloudy was I suppose the result of anemia caused by the hemorrhage.

I do not know any way in which an uncomplicated peptic ulcer without very recent hemorrhage could lead to edema such as he shows. Suppose he has got over the anemia from that previous hemorrhage and still develops edema. There is no way that peptic ulcer could cause such edema as is here described unless just after hemorrhage. Great anemia of course, as from hemorrhage, could cause edema of the legs.

Certainly there is a stomach history in the family, although ordinarily we do not think of these things as important in the family history.

#### NOTES ON THE PHYSICAL EXAMINATION

The gland measurements are big enough to be suspicious I should say. One-half inch in diameter is more than you would expect to find in normal glands.

Just why the pupils and reflexes were normal I do not know. We shall have to come back to that.

#### DIFFERENTIAL DIAGNOSIS

We are dealing with an abdominal case presumably, —a gastro-intestinal case. There was no evidence by barium meal of stomach pathology. We are dealing with an abdominal lesion which has led to emaciation, to a slight secondary anemia, to a very constant vomiting both before and after he came here. It has not so far as I see led to intestinal obstruction. Nothing is said of that in the history, and they got a fair result from an enema. Nevertheless there were some masses scattered around in his abdomen which so far as I know still may be fecal masses. We have a definite statement that the condition of the rectal wall is not normal, that the liver is enlarged, and that the legs are swollen. That is all we have until just before operation, when we have an attack of pain which makes us think of a perforative peritonitis with operation and death.

What was the date of that x-ray, Miss Painter?

Miss Painter: It was done on the 28th.

Dr. Cabot: So that this attack of what sounds like perforative peritonitis was two days later than the x-ray examination. The fact that nothing such as could cause that was found there does not prove that something was not there, though it makes it hard to say what it could be. Perhaps we can put it this way. This is in the stomach or out of it or in both places. Let us take these three possibilities. Suppose it is a lesion in the stomach. What could it be? I do not know any lesion that will ac-

count for all the facts that have been given us. There are only two diseases of the stomach that we consider in a case like this, ulcer or cancer. Take ulcer. I have no doubt he has had it, but the question is, is it now active? Is it an important factor in the cause of his death? Did it perhaps perforate? I can not see how an ulcer with or without perforation can not see how an ulcer with or without perforation can possibly account for all the facts in the case. It certainly can not account for the edema. If these lumps are not fecal masses but something else, they have still to be accounted for. If they are really fecal there is probably nothing wrong with the rectal wall. Anyway ulcer can not account for them.

It is not at all common to see a man so emaciated as he was from an ulcer that has not given more obvious trouble than this. I think I shall have to take back that last statement, because I read "two months and a half before admission the nausea became marked and persistent." If nausea is persistent enough to lead to a person's not getting food it can cause emaciation in two months and a half. Whatever the cause of his nausea was, even if it was not a gastric lesion, it might have caused his emaciation. The difficult thing is to see how he could have had such constant nausea from an ulcer which when the x-ray was done did not block his pylorus and therefore was not causing any considerable obstruction. You do not expect much nausea unless there is obstruction, and we do not seem to have any good evidence of obstruction here. So I see great difficulties in saying that is ulcer. If he has one I believe that it is not important in relation to his death.

Now let us take cancer. I should have very little difficulty in making a diagnosis of cancer of the stomach, very possibly with perforation at the end, if it were not for this negative x-ray. Negative x-ray is a considerable bunker in the way of the diagnosis of cancer of the stomach, but it is not conclusive. I remember very clearly two cases where Dr. Holmes and I were in doubt about this and where on the whole Dr. Holmes felt ready to say, "No, there is no evidence of cancer here," and yet operation showed that it was there. You may get negative x-ray with cancer on the posterior wall often high up. Cancer of the pylorus I suppose it is safe to say would never be missed by a good x-ray man. Dr. Holmes is always ready to say that he may miss it. So we have to recognize that as a rarity. I do not like to make a diagnosis on such a supposedly rare thing.

Suppose we go outside the stomach altogether. Take the second turning of the road that I suggested a minute ago. What could this be outside the stomach? (a) It seems to be a non-febrile condition. There is very little said at any time to suggest fever. Could it be a tuberculous peritonitis or any other infectious lesion involving the abdomen? I think not. (b) Could it have been a cirrhosis of the liver? It is conceivable that the hemorrhage may have been due to that cause. He has edema of the legs, which often goes with cirrhosis of the liver. He was once said to have a suggestion of jaundice. But they certainly would not have operated on him for cirrhosis of the liver. That acute attack at the end is not like cirrhosis of the liver. (c) Could it have been some malignant disease of the rectum? He is said to have an abnormal rectal wall. Could these other tumors in the abdomen represent fecal masses backed up behind the stricture? I think they might. I do not see how anybody could deny that possibility. Then the terminal lesion will be a per-

forative peritonitis by reason of this obstruction, perhaps independent.

Dr. Tracy B. Mallory: I think I can state a little more exactly the findings on rectal examination. What the man who made the rectal examination felt was a diffusely thickened mucous membrane. There were no masses as such, but the folds of mucous membrane were much thicker than normal.

Dr. Cabot: Our job, therefore, is to see what that means. If the folds are thicker than normal what may be the cause? One does not hear of diverticulitis so far down as that, as far as I remember. Diverticulitis of the rectum does not seem proper for us to consider. Could this be some type of enteritis, ulcerative or other, which of course often gives thickening of the rectum and of the whole sigmoid and colon even? We have no symptoms of that. Could the thickening of the rectal wall be merely edema? He has it elsewhere. May he not have it there? I never heard of it. So I do not know what to make of that statement about the thickening of the rectum.

Why should his liver be enlarged? I do not know. I can not hitch that up with any diagnosis I can make. We can not say cancer of the liver. It does not lead to any such stormy attack as he had there just before death. He certainly would not have been operated upon if they had known he had it.

I believe they operated for perforative peritonitis. Sometimes the only way to know what you have in the abdomen is to go in as soon as you can to give the man a chance, whether you can make a diagnosis or not. I feel quite sure that they thought this was the thing to do and they did it. I have nothing to add as to the cause of that perforation. It might be the perforation of a peptic ulcer which has been there a long time, has not given any trouble, and which was very possibly, very probably independent of some of the other long-standing features of his case such as edema.

Running rapidly through the other causes of upper abdominal acute peritonitis, could he have had an acute pancreatitis? There is some suggestion in the mass on the left under the lower ribs. One looks there for masses in pancreatitis. He is at an age when pancreatitis is not unusual. He might have had gall stones. But that of course would not be the cause of his prolonged emaciating illness. Could he have an acute gall bladder? I do not see how he could. If he has there is certainly nothing on record to suggest it to our minds beyond the fact that it is one of the causes of perforative symptoms in the upper abdomen.

I feel very much at sea. I have very little idea what this man had. I have a feeling that he had malignant disease and that it was below the diaphragm, that it probably involved the intestine or the omentum and very possibly the root of the mesentery. How it got there or from what source it came there, if it did, I do not know. That malignant disease might I suppose have been connected with perforation of the intestine, as I have already suggested. I think I will go on record as believing that he did not have cancer of the stomach. I am not willing to say that he had an ulcer that perforated, though that seems perfectly possible. With these odds and ends of inconclusive diagnosis I shall have to stop.

#### PRE-OPERATIVE DIAGNOSIS

Intestinal obstruction.

Lymphoblastoma.

#### OPERATION

Spinal anesthesia. The patient was almost moribund on the table and there was some question as to whether anything should be done. It seemed on

the whole as if the attempt might be worth while because it might be possible to relieve the obstruction.

A median epigastric incision was made. There was a moderate amount of free fluid. The mesentery and omentum were edematous. The small intestine was engorged. There were numerous large soft mesenteric glands. One of these was removed for examination. It looked like malignant lymphoma. There was some sort of vague mass behind the stomach.

At this point the patient was so near death that the operation was concluded immediately without determining exactly what the intra-abdominal situation was.

#### FURTHER DISCUSSION

They were perfectly right not to push any further.

What might the numerous enlarged mesenteric lymph nodes mean? They might be lymphoma of course, and the other nodules that have been felt might be the same thing there and in the intestine, and in connection with that perforation took place. They might be connected with those glands in the neck. I felt some suspicion about that, but dropped it earlier.

A Student: Would it not be possible for it to be malignancy around the pylorus that would not show after gastro-enterostomy?

Dr. Cabot: I do not believe so. I am sorry there is no x-ray expert here. That is one of the places that I know nothing about.

Was the icteric index taken?

Miss Painter: It was three.

A Student: It might be another case of abdominal tuberculosis.

Dr. Cabot: I am betting against that. We had a case of abdominal tuberculosis at the Brigham last week; but there was some fever in that case.

#### CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Carcinomatosis.

Intestinal obstruction.

#### DR. RICHARD C. CABOT'S DIAGNOSIS

Probably malignant disease of the intestine or the omentum, possibly involving the root of the mesentery.

Possibly perforation of the intestine with peritonitis.

Possibly ulcer of the stomach with peritonitis.

#### DR. TRACY B. MALLORY

#### ANATOMIC DIAGNOSIS

1. Primary disease.

Lymphoblastoma involving the stomach, intestine, lymph nodes, liver, spleen.

2. Secondary or terminal lesions.

Strangulated hernia.

General peritonitis.

Dr. Mallory: This case was quite unusual in several respects. The fundamental condition is a relatively uncommon but by no means rare abdominal lesion,—that is, a lymphomatous process restricted almost entirely to the intestinal tract but appearing in several isolated foci. There were numerous small tumors in the stomach. There was a marked infiltration of nearly 15 cm. of the terminal ileum and a portion of the cecum, and there was also a diffuse infiltration of the rectal wall, the latter in my experience being a relatively uncommon site for lymphoma. I think, however, the picture for that rectal mucosa was sufficiently characteristic so that possibly it could have been diagnosed by a protoscopic examination. The terminal event was a strangulated hernia of several loops of ileum through the old operative wound in the mesentery



made at the time of his gastroenterostomy seventeen years ago. Several loops of ileum had pushed through the opening in the mesentery, their circulation had been cut off, and they were undergoing necrosis. The extremely poor condition of the patient and the necessary briefness of the operation prevented them from carrying the operation far enough to recognize the lesion.

Dr. Cabot: Did it look as if he had ever had an ulcer in his stomach?

Dr. Mallory: Yes. There was a very definite healed scar at the pylorus, almost completely occluding it.

Dr. Cabot: Did the liver show anything?

Dr. Mallory: The liver and spleen were both considerably enlarged. I think the spleen should have been felt clinically. It weighed 500 grams. The liver was noted to be somewhat enlarged clinically. They were both diffusely infiltrated.

A Student: Were the neck glands enlarged?

Dr. Mallory: We did not examine the neck, but I have no doubt that they were. The glands throughout the body seemed to be involved.

Dr. Cabot: That is a point that might have been found in life of course. They might have got one of the neck glands out and known about the rest in that way. But he was here only three days.

What was the nature of the lymphoma?

Dr. Mallory: A tumor composed exclusively of round cells of the lymphoblastic series, that is, not a Hodgkin's type. It is the kind that one most frequently finds in lymphoma of the intestinal tract.

A Student: Is this the type that is sometimes limited to the thoracic cavity.

Dr. Mallory: You could get it in the bronchial glands of the thymus perfectly well.

A Student: Was there enough in the stomach to interfere with its function?

Dr. Mallory: That is quite hard to say. The infiltration was relatively diffuse and I imagine it probably interfered relatively little. The other tumors seemed in size at least much more significant particularly the one in the ileum, but I think it is quite definitely characteristic of lymphoma of the intestinal tract that it does interfere with function less than any other tumor. I remember one case which I saw at the City Hospital some years ago where fifteen feet of small intestine were diffusely infiltrated to the size and thickness of an ordinary rubber garden hose. The man came in with an eighteen hour history that led to the clinical diagnosis of acute appendicitis, yet the process must have been going on for weeks and with almost no disturbance of intestinal function whatever.

A Student: Can you think of any reason why that strangulation had formed and taken place just at the end and not sixteen years ago?

Dr. Mallory: No; that is usually the story of any hernia, that it exists years before strangulation occurs.

A Student: Did the lymphoma in any way cause his death?

Dr. Mallory: I have no idea.

Dr. Cabot: I think we have to say yes, because he has been having nausea for two and a half months. He got in an emaciated condition and therefore was not prepared to bear a strangulation. There is a possibility that the hernia might have occurred under any circumstances, but the fact that he was in such poor shape prevented them from doing anything surgically, which they conceivably might done otherwise.

## SILVER SUTURE

J. G. HOLMES, M. D.

Alamogordo, N. M.

(Read before the twentieth annual meeting of the Pecos Valley Medical Association, held at Roswell, N. M., Oct. 10, 1929.)

Wires of the various metals were among the first sutures used in surgery, especially in bone work. This was because of their strength, pliability, the ease with which they could be sterilized and inhibitory action on the growth of bacteria. The list includes silver, copper, brass, bronze, gold, tin, aluminum, platinum, iron and nickel. Gold, platinum, aluminum and nickel are only slightly inhibitory to bacteria, so are not as suitable as others. Copper has the most inhibitory action on bacteria. Iron is easily oxidized in the tissues. Silver wire is the most suitable in most cases. Any metal, if buried in the tissues, might act as a foreign body and lead to a sinus formation.

### REPORT OF CASE

D. C. W. was employed in the railroad shops as machinist helper. His previous history was negative. He was physically well developed and in good health.

On August 22, 1906, when he was about 18 years of age, he was working at a drill when his glove and jumper caught in the machinery. He received a compound comminuted fracture of the left radius in the lower third, besides a dislocation of the left shoulder and other body bruises, and was sent to the hospital, where he remained about six months. Four operations were necessary before he was finally released. About a month after his injury, silver wire was used, to hold the broken pieces of bone, by Dr. G. C. Bryan of Alamogordo, who was railroad surgeon and attended the patient.

Examination of the arm shows that he now has a firm union of the bones, but with some deformity at the wrist. There is about three-fourths of the usual wrist motion. A good grip in the hand. Free motion of the fingers when the palm is down. Some stiffness in the first, second and third fingers when palm is up. There is some shortening of the distal end of the radius, due to improper development.

At times there are tender spots over the lower end of the radius and on several occasions pieces of wire have worked to the surface and been removed. The longest piece was about one and three-fourths inches in length. A piece can now be felt under the skin, but it does not trouble him.

The results were very good as to the use of the arm. The patient states that his left arm is as good as the other one and does not bother him in his work. After his recovery

he completed his apprenticeship as machinist and as boiler maker and has worked with horses and cattle on a ranch.

An x-ray picture taken sixteen years, and another twenty-three years, after the accident shows some interesting facts regarding the action of the silver sutures used in the wound. One loop of the large wire remains intact in the bone about three inches from the wrist joint. Another appears to have broken into several pieces near the wrist, seven of them showing in the picture. The twisted knot is now in the soft tissues in the palmar surface of the wrist. Two short pieces are in the palmar area half-way between the wrist and fingers, and one piece in the back of the wrist.

A finer wire was also used near the wrist and it has been broken into small bits, even to one-fourth inch in length. These remain in the soft tissues of the radial side of the forearm. As silver is not easily oxidized or absorbed, it is presumed that the wires remain embedded in the tissues at this time.

Comparisons of the pictures taken at the different times shows a few changes in the relative positions of the pieces of wire, due, no doubt, to the action of the muscles when in use.

## ARIZONA STATE MEDICAL ASSOCIATION. MINUTES OF THIRTY-EIGHTH ANNUAL SESSION Prescott, Ariz., April 18 to 20, 1929.

### COUNCIL MEETING

The first meeting of the Council was held at the Hassayampa Hotel, at 8:30 p. m., April 17th. Dr. A. C. Carlson, president, presided. There were present, Drs. A. C. Carlson (president), Samuel H. Watson (president-elect), H. D. Ketcherside (vice-president), D. F. Harbridge (secretary), C. E. Yount (treasurer), W. C. Todt (councilor northern district), John E. Bacon (chairman Medical Defense Committee.)

Minutes of previous council meetings were read and approved.

Dr. W. C. Todt, councilor for the northern district reported that they had a very successful council district meeting at Flagstaff.

The treasurer read his annual report as follows:  
TO THE COUNCIL AND HOUSE OF DELEGATES, ARIZONA STATE MEDICAL ASSOCIATION.

GENTLEMEN: I present herewith Treasurer's report, which were: \$250.00 hiring of publicity man; and published \$6.00 for medical defense and \$6.50 for scripion of \$2.00. This was seconded by Dr. Todt, Flanagan, after being inquired into by the attorneys Yuma County, Sharpenstein vs. Doctor R. R. Knotts, have been permitted by fortuitous circumstances to accumulate a small surplus amounting to about lars. The Sharpenstein-Knotts case in Yuma County.  
JOHN E. BACON,

### GENERAL STATEMENT

Total Receipts, all sources:  
Balance General Fund April 12, 1928 \$ 1,148.69  
Dues 1929, 248 members at \$10.00..... 2,480.00  
Refund from Secretary of State..... 5.50

Savings Fund	2,069.82
Defense Fund	4,811.41
United States Bonds	10,000.00

Total Receipts all funds.....s	20,515.42
Total Disbursements all funds.....	7,329.08

Total balance all funds.....	\$ 13,186.34
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### ANALYSIS AND STATEMENT BY FUNDS

#### (1) General Fund:

Receipts:	
Balance from 1928	\$ 1,148.69
248 members pro rated at \$4.00 General Fund	992.00
248 members pro rated at \$6.00 Defense Fund	1,488.00
Refund from Secretary of State.....	5.50
November 19, 1928, Borrowed from Defense Fund	500.00
Total receipts General Fund	\$ 4,134.19

#### Disbursements Duly Authorized—paid from General Fund

A. C. Taylor Printing Co.....	\$ 30.00
W. W. Watkins, reporting and cost light filter	145.00
Southwestern Medicine, 245 members	490.00
Martindell, Horne & Co., Treasurer's bond	30.00
Sloan, Holton, McKesson & Scott, Medical Defense	8.35
Sloan, Holton, McKesson & Scott, Medical Defense	55.00
Sloan, Holton, McKesson & Scott, Medical Defense	100.00
Sloan, Holton, McKesson & Scott, Medical Defense	50.00
Sloan, Holton, McKesson & Scott, Medical Defense	185.00
Sloan, Holton, McKesson & Scott, Medical Defense	336.38
Secretary of State	96.75
Peterson, Brooke & Steiner, file	20.00
Bank of Arizona, Safety Deposit Box	4.00
W. D. O'Neil Co.	13.10
D. F. Harbridge, office expense	60.00
Louise Pearson, reporting discussions, nine meetings at \$15.00.....	135.00
Publicity campaign	250.00
A. C. Taylor Printing Co.	60.62
Donofrio Floral Co.	10.00
Ackers Book Store, floral	15.00
A. C. Taylor Printing Co.	3.25
D. F. Harbridge, office expense	60.00
Arizona Seed and Floral Co.	15.00
John W. Flinn, reimburse for letterheads	8.50
R. J. Stroud, telegrams	3.60
W. D. O'Neil Co.	4.60
A. C. Taylor Printing Co.	24.00
St. Louis Button Co., badges	29.10
	\$ 2,242.25

Balance in Bank of Arizona, General Fund April 13, 1929,	\$1,921.04
Less check outstanding	29.10
	\$ 1,891.94

#### (2) Defense Funds

##### Receipts:

(a) Savings Fund:	
Balance April 12, 1928	\$1,925.03
Interest - coupons	106.29
Interest June 30, 1928	38.50
	\$2,069.82

(b) Defense Fund:	
Balance April 12, 1928	\$4,502.60
Interest June 30, 1928	75.15
Coupons - bonds, December 22, 1928	212.44
Interest, December 31, 1928	21.20
	4,811.41

Total receipts Defense Funds	\$6,881.23
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##### Expenditures:

(a) All of Savings Fund applied to purchase of bonds		\$2,069.82
(b) From Defense Fund - purchase of bonds		3,017.01
Loan to General Fund		500.00
Total expenditures Defense Funds		\$5,586.83

Balance Yavapai County Savings Bank, Defense Fund, Apr. 13-29	\$1,294.40
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#### Clearings:

In General Fund—for Medical Defense	
240 members at \$6.00	\$1,488.00
Borrowed from Defense Fund	500.00
	\$1,988.00

Medical Defense paid out of General Fund	738.73
Due Medical Defense Fund, now carried in General Fund	\$1,249.27

NOTE: Balance in General Fund	\$1,897.94
Due Defense Fund	1,249.27
True balance General Fund	\$ 648.67



## Itemized Statement of Medical Defense expense:

Sloan, Holton, McKesson & Scott, May 16/28...	\$ 8.35
Nov. 19/28...	55.00
Jan. 17/29...	100.00
Mar. 16/29...	50.00
Mar. 23/19...	185.00
Apr. 9/29...	336.38

\$ 734.73

Rent Safety Deposit Box

4.00

Purchase of Bonds July 3, 1928

5,086.83 \$5,825.56

## Total Amount Available for Medical Defense:

Cash in Defense Fund	\$ 1,294.40
Due from General Fund	1,249.27
United States Bonds First Liberty Loan	
Converted 4 1/4 %	10,000.00 \$12,543.67

## EARNINGS OF DEFENSE FUNDS AND BONDS.

Since 1928 Report:	
Bonds,--Coupons June 15, 1928	\$106.29
Coupons, Dece. 15, 1928	212.44
Savings Fund, Interest June 20, 1928	38.50
Defense Fund, Interest June 30, 1928	75.17
Interest Dec. 31, 1928	21.20 \$453.60

NOTE: On November 19, 1928, it was necessary to meet overdrafts on our General Fund; to transfer \$500.00, which was drawing interest at 4%, from our Defense Fund. These overdrafts were due to expenditures authorized by the Council, which were: \$250.00 hiring of publicity man; and publicity cost of argument by Secretary of State \$91.25; making a total of \$341.25, which had not been budgeted.

## UNPAID EXPENSE FOR 1929:

To Southwestern Medicine--248 members at \$2.00	\$496.00
To Secretary for office expense	120.00
Stenographer annual meeting	125.00
Expenses John Alexander	250.00 \$991.00
(Excluding any Medical Defense items which may arise before 1930.)	

## RECOMMENDATIONS:

1. Inasmuch as the Treasurer was embarrassed several times during the year, it is suggested that this Council, which is the Executive Committee of the Association, keep in close touch with the financial condition of the Association.

2. In view of the increased cost of running the Association, your Treasurer recommends that the dues be pro rated \$5.00 for the Association and \$5.00 for Medical Defense, effective for the fiscal year 1929.

Respectfully submitted,

C. E. YOUNT,

Treasurer.

We, the undersigned, a committee duly appointed by President A. C. Carlson, have audited the books of the Treasurer and inspected the Bonds in his custody, and find them correct.

C. R. K. SWETNAM

H. T. SOUTHWORTH

There was a general discussion of the finances of the Association. Dr. Ketcherside moved that the council recommend to the House of Delegates that the per capita assessment for membership in the Association be raised from \$10.00 to \$12.50, to be pro rated \$6.00 for medical defense and \$6.50 for the general fund, which includes the journal subscription of \$2.00. This was seconded by Dr. Todt, and carried.

Dr. Bacon presented the report of the Medical Defense Committee, as follows:

## REPORT OF THE COMMITTEE ON MEDICAL DEFENSE

## ARIZONA STATE MEDICAL ASSOCIATION:

Your Committee on Medical Defense has taken official cognizance of four separate cases during the last year. The case of Melick, Roundtree and Flanagan, after being inquired into by the attorneys for the Committee was settled out of court by Doctor Roundtree who is not a member of the State Association and is, therefore, entitled to settle out of court if he desired to do so.

There is a case filed against Doctors Perkins, Gungle and Langham of Morenci. This case had a preliminary hearing, but the date of trial has not yet been set. The attorney of the association is of the opinion that the case will be non-suited.

The case against Doctor R. L. Looney et al at Prescott also non-suited at the initial proceedings.

There is pending against Doctor R. R. Knotts in Yuma County, Sharpenstein vs. Doctor R. R. Knotts-

This case is now being given a great deal of attention by your Committee, and the attorneys for the association as the circumstances are particularly difficult in this case owing to local quarrels and prejudices that exist between medical men in that county. The case should be non-suited and never reach a jury on its merits, but owing to the conditions if it does reach a jury the prospects of a verdict against Doctor Knotts are very good. This case if it comes to a trial will probably be quite expensive.

The Committee's financial status is as follows:

Balance in Savings Bank April 13, 1929	\$ 1,294.40
Loaned to General Fund	500.00
Dues from 248 members pro rated at \$6.00	1,488.00
Plus \$10,000 U.S. Bonds, 1st Liberty Loan Converted	10,000.00 \$13,282.40
Expense:	
Medical Defense, Legal	734.73
Purchase of bonds	86.83
Rent Safety Deposit Box	4.00 825.58
Balance available for Medical Defense	\$12,456.84

Your Committee has heard gossip that some of the members of the Association believe that the amount of the assessment assigned to medical defense is excessive and should be reduced. There have also been rumors that some of the members of the Association believe that the medical defense fund might be drawn upon for other purposes. Your Committee desires to go on record at this time as being emphatically opposed to a reduction of the fee, and just as emphatically against the diversions of any of the medical defense fund for any other purposes whatsoever. The fact that we have been fortunate in the administration of this fund and have been permitted by fortuitous circumstances to accumulate a small surplus amounting to about ten thousand dollars does not alter the fact that two or three bitterly contested suits would wipe out this fund entirely. It may also be recalled that one of the suits which we defended in the recent past cost the fund in the neighborhood of four thousand dollars. The Sharpenstein-Knotts case in Yuma County may well run to near that amount, and there is no telling when a crop of these law suits may occur, and if your Committee is found with a depleted fund the barrier of defense which has been set up against unscrupulous lawyers and their clients will fall down and our profession will needlessly suffer thereby.

JOHN E. BACON,

Chairman

R. D. KENNEDY,

Member

D. F. HARBRIDGE,

Secretary.

Dr. Harbridge presented the report of the Secretary, as follows:

## SECRETARY'S ANNUAL REPORT, APRIL, 1929

The usual routine business of the office has been carried on. A large amount of correspondence passed through the office, listing memberships and transmitting to the American Medical Association legislation information and considerable correspondence with the American Medical Association relative to Hospitals, nurses, Sanatoriums and Laboratories; consumed its quota of time and effort. Membership in good standing, 232 (two honorary). Dues received

Dues received	\$2,300.00
Expenses for which vouchers were signed.	
General expense	\$2,493.52
Medical Defense	734.73
	\$2,228.25
	\$ 175

This shows a rather severe drain on our finances, leaving a balance of \$1.75 from the total receipts to date. All indications point to a considerable expense this coming year by the Medical Defense.

Respectfully submitted,

DELAMERE F. HARBRIDGE, M. D.

Dr. Todt moved that payment of \$125.00 for stenographer for this annual meeting be authorized. Seconded by Dr. Watson and carried.

Dr. Harbridge reported that Mr. Holton, of the Association's firm of solicitors, had expressed his willingness to collect information about medical defense to be published in the journal of the Association for the education of our members. Dr. Bacon moved that this matter be referred to the Medical Defense Committee, insofar as publication is concerned.

Council meeting adjourned.

#### HOUSE OF DELEGATES

First session of the House of Delegates convened at 5 p.m., April 18, at St. Michael's Hotel, Prescott, with the following members present: President Samuel H. Watson, presiding; secretary, D. F. Harbridge. Cochise county, Drs. Durfee, Ferguson and Bledsoe; Coconino county, Dr. Manning; Graham county, Dr. Squibb; Gila county, Drs. Bacon and Kennedy; Maricopa county, Drs. Goss, Franklin, Greer, Clohessy, Wylie, Bailey, Stroud, E. Payne Palmer and Watkins; Navajo-Apache county, Dr. Wilson; Pima county, Dr. Davis; Yuma county, Drs. Reese and Ketcherside; Mohave county, Dr. Todt; Yavapai county, Drs. Taylor and Yount.

Minutes of the last annual session were read and approved.

In view of the fact that it is difficult to obtain a quorum for the first meeting of the House of Delegates, Dr. Stroud moved that for this first meeting, ten members constitute a quorum, instead of fifteen, at which meeting only reports of committees, reading of the minutes and official installation of the new president take place. Seconded by Dr. E. P. Palmer and, after discussion, carried.

The secretary reported the action and recommendations of the Council at their meeting on the previous evening. Dr. Palmer moved that their actions and recommendations be approved by the House of Delegates. Seconded by Dr. Kennedy and carried.

The secretary read the report of the Medical Defense Committee (see minutes of Council meeting).

Dr. Stroud read a report of the Legislative Committee, concerning the deduction from income tax of travelling expenses to medical meetings. He stated that such expenses are now deductible from income tax, retroactive to 1922. The report is as follows:

During the session in the spring of 1928 an effort was made in Congress by an amendment introduced by Senator Robinson, of Indiana, to allow physicians to deduct their traveling expenses to and from Medical Meetings. This was claimed to be a just measure because all other trades and professions were allowed these deductions.

This bill passed the House some time in 1927, but the Chairman of the Senate Committee on Finance, in view of the attitude of the Department of Internal Revenue, was not disposed to favorably recommend such an amendment.

I was in communication with our legislators at Washington and have a letter signed by A. W. Mellon, Secretary of the Treasury, to the Honorable Lewis W. Douglas, of the House of Representatives, in which he takes up this question. It would seem from Mr. Mellon's explanation that the attitude of Congress and the Secretary of the Treasury was that if physicians were granted this relief,

other professions such as lawyers, engineers and architects would petition Congress for similar relief.

Senator Copeland attempted to propose an amendment to the bill in which he tried to overcome the objection and attempted to insert after the word "Trade" the word "Profession," and attempted to insert after the word "Business" "Or in attending meetings of trades, professional or business organizations of which the taxpayer is a member."

These two substitutions would have overcome the difficulty, but the amendment lost.

I will read you my letter to Congressman Lewis Douglas in which I called attention to a telegram of Senator Cary Hayden which seemed to be very favorable to us, but again Mr. Mellon's opinion overcame our objections—my letter was as follows:

To the Honorable Lewis Douglas,  
United States Congressman,  
Washington, D. C.

My Dear Mr. Douglas:

I have just had a telegram from Senator Carl Hayden saying that the Senate adopted overwhelmingly the bill permitting of the deduction of traveling expenses to a physician while in attendance at "Medical Meetings."

Each of us in the Arizona Medical Society is interested in the passing of the bill which is a legal and logical thing, as we seek new sources of information in an intensive way which makes us better servants of the public.

I know from your interest that you are behind us and I personally wish you would use your good offices to enlighten other members of the justice of the issue.

With best personal regards, I am,

Very truly yours,

R. J. STROUD, Chairman,

Committee on National Legislation,  
Arizona State Medical Association.

Both of our Senators believed we were right in our contention and on May 28th, 1928, I received the following letter from Congressman Douglas:

Washington, D. C.  
May 28, 1928.

Dr. R. J. Stroud, Chairman,  
Committee on National Legislation,  
Arizona State Medical Ass'n.,  
Phoenix, Arizona.

My dear Dr. Stroud:

Replying to your letter of May 19, I regret to advise that the conference struck out the deduction of traveling expenses to physicians while in attendance at Medical Meetings, and the House agreed to the conferees report in that form.

Regretting that I am compelled to send you this unfavorable report, I am, with best wishes,

Yours very sincerely,

L. W. DOUGLAS.

On May 3rd I received a telegram from Congressman Douglas in which he stated also that the narcotic tax would not be decreased. I presume by this that he meant our contention that one dollar was fee enough to pay after we had successfully reduced it from three dollars, and Congress was attempting to re-establish the three dollar fee.

Our Senators were against the increase of the existing license fee of one dollar under the Harrison Narcotic Act, and we were successful in combating the increase. The Senate, on May 15th, voted to reject the recommendation of the Committee to increase.

It is, however, a pleasure for me to be able to say to you that at the present time one of our brother doctors has taken up this question thru the Courts and has successfully beaten the Treasury



Ruling by carrying to the Board of Tax Appeals the fact that he had deducted his traveling expenses from his income tax, and would not pay the tax against this amount. The ruling of the Board of Tax Appeals is to the effect that physicians are now allowed to deduct traveling expenses to and from meetings, as well as their expenses for room and board, provided that they obtain receipts and keep them in order to be able to show such expenditures to the Internal Revenue Officers when they claim such deduction.

There are no other bills before Congress which particularly affect the profession at the present time.

R. J. STROUD, Chairman,  
National Legislation Arizona State  
Medical Association.

Dr. Palmer moved that the report be accepted; seconded by Dr. Franklin, and carried.

Dr. Palmer announced the formation of an Arizona Cancer Committee, and moved that the retiring president be, for the year following his retirement from that office, a member of this committee. Seconded by Dr. Kennedy, and carried.

Meeting adjourned to the following day.

Open meeting of the House of Delegates was convened at 3:30 p.m., on April 19th, with president, Samuel H. Watson in the chair. Present: Drs. Durfee and Ferguson (Cochise); Dr. Manning (Cocino); Dr. Squibb (Graham); Drs. Bacon and Kennedy (Gila); Stroud, Goss, McIntyre, Palmer, Greer, Franklin, Wylie, Sweek, Bailey, Watkins and Harbridge (Maricopa); Dr. Wilson (Apache-Navajo); Drs. Hoffman, Davis and Littlefield (Pima). Dr. Taylor (Yavapai); Drs. Ketcherside and Reese (Yuma); Dr. Todt (Mohave).

Dr. Greer read the report of the Committee on Necrology, as follows:

To the President, Arizona State Medical Association:

Your Committee on Necrology submits the following report:

Whereas death has removed from the ranks of the Medical Profession of Arizona,

Dr. Joel I. Butler,  
Dr. Charles A. Peterson,  
Dr. Charles S. Vivian,  
Dr. Henry H. Stone,  
Dr. John Bryan McNally,  
Dr. Henry A. Hughes;

And Whereas, these physicians were prominent in the activities of our State Medical Association;

And Whereas, by their kindly nature, courteous manner and high professional attainments, they won the admiration, respect and friendship of their professional confreres throughout their state;

Therefore be it resolved, that in their death this Association has lost active and useful members, and the State of Arizona loyal and public-spirited citizens;

And Be It Further Resolved, that this resolution be made a part of the permanent record of the Arizona State Medical Association.

C. E. YOUNT, M.D.  
I. E. HUFFMAN, M.D.  
J. M. GREER, M.D.

April 19, 1929.

Committee.

It was moved and seconded that this report be accepted as read; carried.

Dr. Watkins mentioned the need of the Association for a good stereopticon lantern and screen, and moved that the Association purchase a lantern and place it each year in the custody of the county society who was due to entertain the Association at the next annual meeting. Such entertaining society could thus have the use of the lantern and could see

that it was ready for use at the annual meeting. He thought the cost would be somewhere in the neighborhood of \$100.00, and could be purchased some time before the next annual meeting. Motion was seconded by Dr. Bacon, and carried.

The following officers were nominated and duly elected:

Delegate to the American Medical Association, Dr. R. D. Kennedy of Globe.

Alternate delegate to the American Medical Association, Dr. Orville H. Brown, Phoenix.

President-Elect, Dr. J. Madison Greer, of Phoenix.

Vice President, Dr. Harry A. Reese, Yuma.

Secretary, Dr. D. F. Harbridge, Phoenix.

Treasurer, Dr. C. E. Yount, Prescott.

Councilor Central District, Dr. W. Warner Watkins, Phoenix.

Member Medical Defense Committee, Dr. John E. Bacon, Miami.

Dr. Bacon read the following letter from Mr. Holton, of the firm of Sloan, Holton, McKesson and Scott, the Association's solicitors:

"I find that it will be impossible to attend the coming meeting of the Arizona State Medical Association and to address them, as I had intended, upon the subject of 'Medical Defense and the Situation in Arizona.' I desire, however, to make a report to the Association on the litigation now pending and that which has been disposed of during the past year and to intersperse some remarks upon the subject of medical defense.

During the past year, three suits have been instituted affecting members of this Association, namely: Chris Christiansen vs. Dr. R. N. Looney and Dr. J. H. Allen, et al, in the Superior Court of Yavapai county; James Mammon vs. Dr. C. H. Laughran, Dr. W. R. Quinn and Dr. E. J. Gungle in the Superior Court of Greenlee County and C. C. Sharpenstein vs. Dr. R. R. Knotts in the Superior Court of Yuma county, Arizona. Of these suits, the latter two are still pending. The case of Christiansen vs. Drs. Looney and Allen, has been tried and resulted in a verdict for the defendant doctors. This suit was a particularly vicious one inasmuch as there was an attempt to recover damages for what the complaint denominated "conspiracy to injure plaintiff by an unwarranted finding of insanity" by the two doctors named who were acting under the statute and under the appointment of the court as a lunacy board or commission. Under the law, the finding of such board is in the nature of a judicial determination of the question of sanity, which the court held could not be attacked on the ground of improper motives on the part of the board. In addition to this fact, there was a total want of evidence of any conspiracy on the part of any of the defendants. The case was one palpably unjustified upon any ground, but it illustrates that the mere fact that a physician has done nothing to justify a suit for damages against him, nevertheless, such suits may be brought with the attendant expenses necessary to a proper defense. Unfortunately, in most instances, plaintiffs which bring such suits are unable to respond to a judgment for costs, and it is also an unfortunate fact that in such suits costs of attorney fees may not be taxed against the plaintiff. The doctor is hailed into court on a groundless charge and his only redress is to employ counsel and protect himself against a judgment. In many of these suits in order to properly defend the same involves an expenditure of considerable sums of money. No physician or surgeon, no matter how skillful or careful, and no matter how complete his education and training, is exempt from the danger of such unwarranted attack.

The other two suits above mentioned are still pending. The suit filed against Drs. Laughran,

Quinn and Gungle in Greenlee county is on charges that the operation was performed without the consent of the parents. The complaint charged, in general terms, negligence on the part of the physician but in the face of motions to compel them to state specifically the acts of negligence and how such acts departed from the established medical practice, counsel for plaintiff was compelled to amend his complaint so that as the complaint now stands practically the sole charge against the physician is that the operation was performed without the consent of the parents and that no emergency existed. As to the question of the existence of an emergency, in such cases plaintiff will be compelled by competent evidence, that is to say, by the evidence of a skilled physician, to describe the deceased's physical condition at the time and that such operation, which by the way was the removal of the appendix, was unnecessary and that no emergency existed. Not only is that true, but the proof will show that the parents of the child not only acquiesced in and requested the operation but were present at the hospital at the time of the operation. I am reliably informed that it will be utterly impossible for the plaintiff to establish the fact affirmatively by competent proof that no emergency existed. This is another clear example of a groundless suit brought against competent and ethical physicians probably upon the hope that some settlement might be made rather than spend the money necessary for defense. I might say that the most cogent deterring influence against the bringing of this harrassing litigation is the fact that none of these suits where the Medical Association has been involved have resulted in any pecuniary advantage whatever to any of the parties plaintiff. Not only is it true, but in so far as my knowledge of the history of the Arizona State Medical Association is concerned, there has never been a judgment against any of its members on a malpractice case, nor has any member of the Association been mulcted in damages by the payment of any sum of money in compromise of such litigation. There is a question in my mind which would have the worst influence, a judgment in favor of the plaintiff at the end of two or three years of litigation, or compromise. I am inclined to believe that if it became a matter of common knowledge that these suits could be brought and a compromise effected that it would lend more encouragement to such litigants than any other one thing that could happen. The attitude that the Association has heretofore taken through its counsel that we have thousands of dollars for defense but not one cent for tribute has become pretty well disseminated among those attorneys in the state of Arizona who indulge in this sort of litigation, and personally I feel that this attitude should be consistently maintained. Not only should that be said of the Association, but it should be absolutely true of the Association that it has thousands of dollars for defense and that it never compromises a case.

The remaining case above mentioned, that of Sharpenstein vs. Dr. Knotts in the Superior Court of Yuma County now pending, is perhaps one of the most troublesome that has been brought in recent years, not because, so far as my investigation goes, it is true that the physician has been guilty of any deviation from established medical practice but because there appears to be something of a feud between certain physicians including the defendant in this case, by reason of which it is possible that the plaintiff might be able to obtain local medical testimony in support of his allegations of negligence contained in his complaint. The injury to the plaintiff in that case was the fracture of the femur bone. I feel justified in stating that the reduction of that

fracture by the defendant doctor conformed in every detail to the best practice. However, before a complete union had occurred, rather perhaps before the plaintiff had completely recovered, through outside influence the plaintiff was removed from the hospital of the defendant doctor, a distance of five miles, to another hospital where a different course of treatment involving an operation was had. This case is set for trial on the 29th of this month. The situation involved in this case brings me to the discussion of what is obviously the most important legal fact in the defense of malpractice cases. Doubtless all of the members of the Association are familiar with these facts, but it may not be amiss to bring them again to their attention with emphasis upon their importance. Malpractice cases are founded upon contract which the law implies, namely, that a physician is possessed of that degree of learning and skill possessed by the ordinary physician and surgeon practicing in the communities in which he is located and in similar communities and that he will apply such skill and learning with a reasonable degree of care. In order that the plaintiff may recover against a physician he must allege and prove either that the physician was not possessed of that skill which the law requires, or that being possessed of that skill which the law requires, or that being possessed of such skill he was careless and negligent in the performance of his duties. The latter situation involves what is termed by law a "tort" and most malpractice cases are tort actions, that is to say, are actions based upon negligence of the physician or unskilled acts of the physician. As to the question of the possession by the physician of that degree of skill and learning which the law requires, the function of the Medical Association is, of course, to see that no physician is admitted to its membership who does not possess the necessary skill and learning, and the members of the Association should see to it that whenever the charge of lack of skill and learning is brought against any of its members that it shall be in a position to overwhelm the court and jury with evidence of the fundamental qualifications of any member so attacked. As to the charge against a physician that he has been negligent or unskillful in the actual performance of his duties such charge in almost every instance involves a strictly medical question and requires proof by medical witnesses—witnesses who belong to the School of Medicine of the physician so charged—witnesses who can qualify as being engaged in the practice of such school of medicine in the same community with the defendant, or in a similar community, who will testify affirmatively that the act so charged to be negligent or unskillful was in fact negligent or unskillful and that he has violated or departed from the established medical practice in such cases. There are a few isolated examples of such charges which may be proven by lay testimony but these are of unusual occurrence. As a general rule, the lack of such testimony on the part of the plaintiff is fatal to his recovery, and the very vital and important feature of that fact is that the burden of presenting that sort of testimony is upon the plaintiff and unless that burden is borne by the plaintiff and such testimony produced, it is the duty of the court at the close of the plaintiff's case to decide the matter himself, dismiss the jury and render a verdict for the defendant. This fact is the greatest instrument of defense in the hands of a physician. It shields him against the greatest hazard which he faces, namely, the passing upon the facts by a jury. I need not dwell upon the fact that the tendency of juries is to be swayed by sympathy and prejudice and the communistic principle that some one having suffered, some one should com-



pensate is too often unconsciously, perhaps the motivating force impelling their verdicts. It, therefore, is important that the members of the Association should always bear in mind that in almost all of these cases unless there is medical testimony of negligence or want of skill afforded the plaintiff, he cannot recover. Some physician must furnish the plaintiff with ammunition. It is important that the Association make sure that those jealousies and bickerings which are common to physicians, as well as to all of humanity, particularly, as I suppose in smaller localities, should not be carried to the extent that one physician through such motives should be so foolish and short-sighted as to testify against another and thus furnish the evidence necessary to a verdict which would set a precedent of immeasurable damage to the profession. It is needless to say that this does not mean that a physician called or regularly subpoenaed to give his testimony in a case should not testify to the truth and nothing but the truth so far as he knows, but there is a vast difference between that sort of thing and conniving and colluding with the plaintiff to bring about such a judgment. No groundless malpractice case can result in a verdict for the plaintiff without the collusion and connivance of some local physician. This is the thing that the Association must eradicate. The passage of the Workmen's Compensation Law has eliminated at least fifty per cent of what is commonly called "ambulance chasing" cases which are directly akin to malpractice cases and those in the legal profession and out of it who are dependent upon that class of litigation for their livelihood are none too prosperous, and the fact of the filing of three malpractice cases within the state during the past year points in my judgment to the fact that any encouragement given to this class of litigation by the obtaining of judgments and settlements in these cases would result in an epidemic of such litigation. In almost every instance, the plaintiff demands excessive damages running into many thousands of dollars and the juries in this state as a general rule seem to have little conception of the sacrifice and toil necessary to the getting together of a competence or a "nest egg" for old age, and when the matter is left in their hands, my observation is that it is their inclination to be liberal in the extreme to one appearing before them in a pitifully physical condition, whether such condition be actual or assumed. The harder a physician has worked and the more he has been able to accumulate through such effort and sacrifice, the greater the hazard of such litigation. The best protection the physicians of this state can have is an efficient medical defense organization, amply financed, presenting a solid front and practicing eternal vigilance.

In closing, I desire to say that there are still pending in this state three cases; the case discussed pending in Greenlee county, that of Mammon vs. Drs. Laughran, Quinn and Gungle; Sharpenstein vs. Dr. Knotts and the case of Waugh vs. Dr. L. S. Campbell, both pending in Yuma county. The latter case has been pending for two or three years and unless pressed within a short time will be subject to dismissal for want of prosecution. The case of Flanigan vs. Dr. Rounseville and Dr. Melick in Yavapai County has been dismissed with prejudice. Dr. Rounseville who is not a member of this Association insisted upon the payment of a small amount to the plaintiff. Dr. Melick who is a member of the Association, at my advice absolutely refused to participate to any extent whatever in such settlement and insisted that if Dr. Rounseville make such a settlement that the case be dismissed as to him with prejudice. That case alleged x-ray burns."

Dr. Stroud, on behalf of the Maricopa County Med-

ical Society, invited the Association to hold the 1930 session in Phoenix. Motion was made and carried that this invitation be accepted.

Dr. H. T. Bailey moved that the Association extend to the Yavapai County Medical Society a vote of thanks for the entertainment provided at this meeting. Motion carried.

Dr. Watkins moved that the House of Delegates approve whomever the president appoints to serve on the Committee on Public Welfare, and that this committee be requested to report to the next meeting of the House of Delegates on the matter of the Medical Practice Act. Seconded and carried.

House of Delegates adjourned sine die.

#### SCIENTIFIC SESSIONS

The first open Scientific Session was convened at the St. Michael Hotel at nine a.m., April 18th, with Dr. A. C. Carlson, president, in the chair. Invocation was given by Rev. Alfred W. Nichols, of Prescott. Addresses of Welcome were given by the Hon. E. C. Seale, Mayor, on behalf of the city of Prescott; Dr. W. E. McWhirt, of the staff of U. S. Veterans Hospital No. 50, on behalf of the medical staff of that institution; and by Dr. John W. Flinn, president of the Yavapai County Medical Society, on behalf of the entertaining society. The reply to the addresses of welcome was made by Dr. H. T. Bailey, vice-president of the Association.

The president-elect, Dr. Samuel H. Watson, of Tucson, was then introduced by the retiring president, Dr. A. C. Carlson. Dr. Watson assumed the chair and office of presidency.

The first paper was by Dr. John J. McLoone, of Phoenix, on "Otitis Media in Infants and Young Children." It was discussed by Dr. H. T. Bailey, of Phoenix.

The next paper was by Dr. James H. Allen, of Prescott on "The Treatment of Pneumonia." It was freely discussed by Drs. S. C. Davis of Tucson, H. K. Wilson of Holbrook, H. D. Ketcherside of Yuma, Robert Franklin of Glendale, W. C. Todt of Kingman, W. W. Wilkinson of Phoenix, John W. Flinn of Prescott, Frank J. Milloy of Phoenix, John Alexander of Ann Arbor, Mich., and Donald J. Frick of Los Angeles.

Dr. W. G. Schultz of Tucson presented a paper on "Bladder Neck Obstruction" illustrated by lantern slides. It was discussed by Drs. Chas. N. Plousard of Phoenix and C. C. Benedict of Whipple.

Dr. T. T. Clohessy of Phoenix read a paper on "Eczema and Eczematoid Ringworm." It was discussed by Drs. R. N. Looney of Prescott, Bayard Sullivan of Whipple, Donald J. Frick of Los Angeles and W. Warner Watkins of Phoenix.

At the afternoon session, which convened at 1:30 p. m., April 18th, the first paper was read by Dr. Howell Randolph of Phoenix, on "History Taking and Evaluation in the Various Chest Conditions."

The second paper was read by Dr. W. Warner Watkins of Phoenix, on "Fungus Infection With Special Reference to the Lungs."

The two papers were discussed by Drs. Samuel H. Watson of Tucson, I. D. Lewey of Whipple, H. T. Bailey of Phoenix, Bayard Sullivan of Whipple, C. E. Yount of Prescott, and E. Payne Palmer of Phoenix.

Dr. John Alexander, Professor of Surgery of the University of Michigan, Ann Arbor, Mich., gave the Address on Surgery, using as his subject, "The Empyema Problem."

Dr. John E. Bacon of Miami presented a paper on "The Treatment of Fractures."

Dr. Robert Ferguson of Bisbee read a paper on "Fractures of the Pelvis, Case Reports and X-rays."

The two papers on fractures were discussed by

Drs. H. T. Southworth of Prescott, R. D. Kennedy of Globe, J. M. Greer of Phoenix, E. Payne Palmer of Phoenix and W. Warner Watkins of Phoenix.

The scientific session adjourned at 5 p. m., for the executive meeting of the House of Delegates.

On Friday forenoon, April 19th, clinical and laboratory demonstrations were given at the U. S. Veterans' Hospital and at the Yavapai County Hospital, from 8 to 9:30 o'clock. These were well attended and and thoroughly enjoyed.

Scientific session convened at 10 a. m., April 19th, with Dr. S. H. Watson, president, in the chair.

Dr. Robert S. Flinn of Prescott read a paper on "The Treatment of Diabetes by the General Practitioner." This was discussed by Dr. W. Warner Watkins of Phoenix.

Dr. S. C. Davis of Tucson read a paper on "Modern Examination and Treatment of Patients with Chronic Bright's Disease."

Dr. J. B. Littlefield of Tucson read a paper on "Urinary Findings Simulating Nephritis."

These two paper were discussed by Drs. Frank J. Milloy of Phoenix, R. J. Stroud of Tempe, Robt. Ferguson of Bisbee, John E. Bacon of Miami, W. W. Wilkinson of Phoenix, Albert Soiland of Los Angeles and D. F. Harbridge of Phoenix.

Dr. Donald J. Frick of Los Angeles, at this time gave the annual Address on Medicine, using as his subject, "Heart Disease, the Necessity of Study and Prevention."

At the afternoon session, which convened at 2 p. m., the first paper was read by Dr. F. B. Sharp, of Phoenix, on "The Conduct of the Difficult Obstetrical Case." This paper was discussed by Drs. C. E. Yount of Prescott, J. K. Hazel of Jerome, and W. W. Wilkinson of Phoenix.

The next paper was an invitation one, presented by Drs. Albert Soiland and Egbert J. Bailey, of Los Angeles, on "The Importance of Radiation Therapy to the Practice of Medicine." It was discussed by Drs. W. W. Wilkinson of Phoenix and R. J. Stroud of Tempe.

Dr. E. Payne Palmer, of Phoenix, read a paper on "A Plea for the Very Early Diagnosis and Very Early Treatment of Cancer." It was discussed by Drs. Albert Soiland of Los Angeles and Egbert J. Bailey of Los Angeles.

General session adjourned at 3:30 p. m., for a general meeting of the House of Delegates (see above minutes.)

Following the adjournment of the House of Delegates, the Arizona Cancer Committee presented the Canti motion picture film, loaned by the American Society for the Study and Control of Cancer. This picture shows the cellular activity of normal and cancer tissues in vitro. It was presented at the Elks' Theater, with explanatory talk by Dr. E. Payne Palmer.

On Saturday morning, April 19th, clinical demonstrations and laboratory demonstrations were again held at the Mercy Hospital and Pamssetgaaf Sanatorium. Following these, members and guests took cars and went to Jerome, where they were served luncheon in the Club of the United Verde Mining Co. Following this luncheon, the general scientific sessions were resumed in the library of the Club.

Dr. H. T. Bailey of Phoenix read paper on "The Eye in Systemic Conditions." It was discussed by Dr. Chas. N. Ploussard of Phoenix, and Dr. C.R.K. Swetnam of Prescott.

Dr. Joseph M. Greer of Phoenix read paper on "The Surgical Knee." It was discussed by Drs. A. C. Carlson of Jerome and R. D. Kennedy of Globe.

Dr. Frank J. Milloy of Phoenix read paper on "The Differential Diagnosis of the Commoner Diseases of the Gastro-Intestinal Tract."

Dr. Frank J. Callander of Tucson read paper on "Functional Colitis."

These two papers were freely discussed by Drs. R. H. Thigpen of Jerome, Geo. W. Bassett of Whipple, Bayard Sullivan of Whipple, E. Payne Palmer of Phoenix, and H. T. Bailey of Phoenix.

The last paper of the scientific program was read by Dr. F. C. Jordan, of Phoenix, on "Cerebrospinal Fever, with Special Reference of the Present Epidemic." This was discussed by Drs. C. C. Hedberg of Jerome, Robert S. Flinn of Prescott, R. J. Stroud of Tempe, Chas. N. Ploussard of Phoenix, W. Warner Watkins of Phoenix, A. W. Matschke of Clemenceau, and Powers of Jerome.

Adjournment sine die.

## ARIZONA STATE BOARD OF MEDICAL EXAMINERS

At the meeting of this Board in January, 1930, there were present, Dr. F. T. Wright, Douglas, President; Dr. H. P. Mills, Phoenix, Secretary; Dr. J. M. Greer, Phoenix; Dr. Oscar S. Brown, Winslow; Dr. H. L. Schornick, Mesa.

Seventeen applicants were granted licenses to practice medicine and surgery in Arizona, as follows:

DR. LEROY C. POTTER, of Salt Lake City; graduate of Univ. of Nebraska, 1923; licensed by reciprocity with Idaho.

DR. HERMAN C. BODEMER, of Globe, Ariz.; graduate of Univ. of Nebraska, 1923, licensed by reciprocity with Nebraska.

DR. REDFORD A. WILSON, Tucson, Ariz.; graduate of Vanderbilt Medical School, 1926; by reciprocity with Tennessee.

DR. HORACE G. WILSON, Gallup, N.M.; graduate of Univ. of Maryland, 1902; by reciprocity with New Mexico.

DR. GEORGE S. BLAKE, Tempe, Ariz.; graduate of Bellevue Hospital Med. Coll., 1892; by reciprocity with Indiana.

DR. JOHN McKIBBIN, Loma Linda, Calif.; graduate of Coll. of Medical Evangelists, 1928; reciprocity with National Board of Medical Examiners.

DR. MARION P. FIROR, Ajo, Ariz.; graduate of Univ. of Penna., 1926; reciprocity with Maryland.

DR. WILLIAM R. LEVERTON, Tucson, Ariz.; graduate of St. Louis University, 1909; by reciprocity with Illinois. Dr. Leverton is with the Veterans' Bureau Hospital in Tucson.

DR. LEROY JONES, Phoenix, Ariz.; graduate of Baylor University, 1928; by examination. Dr. Jones is temporarily located in Phoenix, taking care of the practice of Dr. Charvoz, who has been ill for several months.

DR. LESLIE R. KOBER, Phoenix, Ariz.; graduate of Northwestern Univ., 1929; by examination. Dr. Kober is associated with Dr. Kim Bannister of Phoenix.

DR. DONALD J. HUNT, Fort Defiance, Ariz.; graduate of Northwestern Univ. 1927; by examination.

DR. JOSEPH P. McNALLY, Prescott, Ariz.; graduate of St. Louis University, 1929; by examination.

DR. JAMES L. SPIKES, Ajo, Ariz.; graduate of Univ. of Arkansas, 1928; by examination.

DR. HARRY BOYSEN, Castle Hot Springs, Ariz.; graduate of Univ. of Iowa, 1928; by examination.

DR. COOK P. GREGG, Tucson, Ariz.; graduate of Barnes Med. College, 1900; reciprocity with Missouri.

DR. JULIUS H. WOODWARD, Ruby, Ariz.; graduate of Washington Univ., 1925; by reciprocity with Missouri.



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## THE ARIZONA STATE MEDICAL ASSOCIATION MEETING IN PHOENIX

The Thirty-Ninth Annual Session of the Arizona State Medical Association will be held in Phoenix, on April 17, 18 and 19. Dr. Joseph M. Greer, president-elect, chairman of the program committee announces a very attractive series of papers so far secured. Dr. D. F. Harbridge, secretary of the State Association and Dr. Frank J. Milloy from the Maricopa Medical Society, are the other members of the Program Committee. Headquarters will be at the Hotel Westward Ho, where all scientific sessions will be held.

The preliminary announcements include papers by Drs. Samuel H. Watson, of Tucson, John W. Flinn of Prescott, John E. Bacon of Miami, Allen K. Krause of Tucson, Victor Randolph and W. Warner Watkins of Phoenix, A. C. Kingsley of Phoenix, C. T. Sturgeon of Los Angeles, and several others. Complete program and announcements regarding special features will be published in our March issue.

## ARIZONA PUBLIC HEALTH ASSOCIATION

The Third Annual Meeting of this Association will be held in Phoenix April 15 and 16, the two days immediately preceding the convention of the Arizona State Medical Association. A very interesting program is being planned, with general and special sessions of interest to health officers, physicians, dairy inspectors, sanitary inspectors, water and sewage plant operators, and health nurses. Dr. H. T. Southworth, Prescott, is president of the Association, and Miss Jane Rider, of the State Laboratory, Tucson, is secretary. Further details of the program will be given in next month's issue of this journal.

## THE GATEWAY CLUB OF EL PASO

The Chamber of Commerce of El Paso believes in advertising the community as a health resort. This phase of its work is carried on by what is called the Gateway Club, whose president this year is Dr. C. M. Hendricks. This Club has issued a very remarkable Climatological Data Chart, showing in a very brief and comprehensive manner the facts about climatic conditions in El Paso and thirty-four other cities of the United States. Included in this folder chart is a map showing the percentage of sunshine in various areas of the southwest. The Gateway Club and Dr. Hendricks deserve the compliments and thanks of the medical profession of the southwest for this compilation of data. The folder is made up in such size that it will fit into the ordinary letter file, with projecting margin so that it can be filed and easily referred to. It is intended to focus the eyes of physicians of the entire United States on El Paso as the health center of choice in the southwest.

## GOOD WORK BY ARIZONA STATE HEALTH DEPARTMENT

The securing of aid from the United States Public Health Service and the Rockefeller Foundation for epidemiological work in Arizona has enabled Dr. R. J. Stroud, State Superintendent of Health, to begin some much needed work in that state, without having to wait for legislative appropriations. Dr. West, who has been working in Maricopa County, will have active charge of the epidemiological work throughout the state, being assisted by a competent corps of nurses. Dr. West is a thoroughly competent epidemiologist. In Maricopa County Dr. West made a start in a constructive program, and that county will probably be included in the general state work.

The monetary aid for this work was se-

cured by Dr. Stroud through personal conference with officials of the Rockefeller Foundation and the Public Health Service, and is an unusual concession on their part.

### PROPOSED CHANGES IN CHEMICAL TARIFFS

"The German I. G. and the European Dye Cartel, dominated by the German chemical monopoly, will the committee recommends the following outline be the only beneficiaries of any change in the present methods of assessing duties on coal tar chemicals. The losers will be the American people and the forty-five American coal tar chemical manufacturers, who, under the present tariff act, have built up an industry that is indispensable to the health, the prosperity and the national defense of our country. Foreign valuation on coal tar dyes imported into this country will mean the end of the American coal tar chemical industry."

Thus The Chemical Foundation introduce their brief of objections to the proposals that the tariffs on foreign made drugs and chemicals be based on foreign valuations and prices. It seems to be a matter in which the medical profession is vitally concerned. Those who recall the days when salvarsan went off the market because it was made only abroad and its importation into this country stopped, or who recall the days when bacteriological stains could be secured only from abroad, —and who will compare those days with the present ease of purchase and low price of arsphenamine, and the high quality and low price of American made aniline dyes, will not desire any change which will cripple the chemical industry in America. The brief above mentioned closes its argument with the following significant statements:

"The American coal tar chemical industry is indispensable to the health, the prosperity and the national defense of the American people. Coal tar dyes are indispensable also in research into the cause, prevention and cure of human diseases. Foreign valuation will mean a return to the shocking conditions which prevailed in this country during the late war, when the United States had no coal tar chemical industry and was entirely dependent upon Germany for the dyes indispensable in industries having an annual production of several billions of dollars of goods, and for many important medicines to alleviate human suffering and to prevent death."

The picture is probably drawn with bold strokes, but undoubtedly the medical profession should be directly interested in retaining the present tariffs,—or method of computing tariffs,—in order to protect the chemical and drug industry in this country.

### HOSPITAL SERVICE FOR PATIENTS OF MODERATE MEANS

A pamphlet has been issued by the Committee on the Cost of Medical Care presenting in abstract form the information gathered by the Committee regarding the special

facilities and financial adjustments provided by certain hospitals in the United States and Canada for those patients not accepting, or not eligible for, charity service, but who, at the same time, cannot pay the rates usually charged for private service. Either the abstract or the full report of eighty pages will be sent to any person especially interested, if application is sent to the Committee headquarters at 910 Seventeenth St., N.W., Washington, D. C.

### DALLAS CLINICAL CONFERENCE

Doctors in New Mexico and western Texas should be interested in the advertised Clinical Conference and Postgraduate Course to be held in Dallas, April 15 to 19. Men of national reputation will be present to give lectures and clinical addresses, the forenoons being given up to clinics. The dates coincide with the Arizona State Medical Association, so that the doctors of Arizona will not be able to attend, but many members of the profession from New Mexico and western Texas no doubt will take advantage of this clinical conference.

### GRANT COUNTY (N.M.) MEDICAL SOCIETY ANNUAL MEETING

The annual banquet and business meeting of the Grant County Medical Society was held at Fort Bayard, N.M., on December 20th. The following officers were elected for the year 1930:

President, Dr. Wm. R. Washburn, Fort Bayard.  
Vice President, Dr. V. K. Adams, Hurley.  
Secretary and Treasurer, Dr. N. D. Frazin, Silver City.

Censors, Drs. N. D. Frazin, (Silver City), S. J. Mann (Fort Bayard) and R. J. Groom, (Santa Rita.)

Delegate to the annual meeting of the New Mexico Medical Society at Raton, Dr. R. J. Groom of Santa Rita.

### EL PASO CITY-COUNTY HOSPITAL

The following staff officers have been elected for the year 1930:

President, Dr. W. R. Jamison.  
Vice-President, Dr. S. H. Newman.  
Secretary and Treasurer Dr. Shered L. Mengel.  
Efficiency Committee, Dr. T. J. McCamant, Dr. J. J. Gorman, Dr. J. E. Morrison.  
Chief of Medical Service; Dr. S. H. Newman.  
Chief of Surgical Service, Dr. H. E. Stevenson.

### HOTEL DIEU (EL PASO)

The following staff officers were elected for 1930:

President, Dr. R. L. Ramey.  
Vice-President, Dr. W. P. Rogers.  
Secretary and Treasurer, Dr. C. H. Mason.  
Committee on Supervision of Records and Programs: Dr. J. J. Gorman, Chairman. Dr. H. H. Varner, Dr. E. W. Rheinheimer.



## PERSONALS AND NEWS ITEMS

DR. WILLIAM A. KINGSLEY, formerly of Tucson, Arizona, has located in Phoenix, with offices in the Heard Building. He will practice his specialty of Diseases of the Eye, Ear, Nose and Throat.

THE SOILAND CLINIC of Los Angeles, announces that after January 1st, 1930, the organization will consist of the firm of Soiland, Costolow and Meland, with Doctors Bailey and Warner associated. Their work is devoted entirely to treatment by radiation.

DR. M. K. WYLDER, of Albuquerque, N. M., is attending the American College of Physicians, at their annual congress, in Minneapolis, Minn., the middle of February.

DR. FRANKLIN MARTIN, of Chicago, Director General of the College of Surgeons, is visiting in Phoenix for several weeks, staying at the Biltmore Hotel.

## EL PASO COUNTY MEDICAL SOCIETY

January 27, 1930.

Meeting called to order by the president, Dr. Paul Gallagher, at 8 p. m. There were 48 members and 7 visitors present.

The president read the appointment of the following men as constituting the Certified Milk Commission for the ensuing year: Dr. J. A. Rawlings, Dr. Mattie F. Hill, Dr. R. H. Geer, Dr. A. P. Black and Dr. C. F. Rennick.

Dr. R. B. Homan stated that the chairman of the Program Committee, Dr. Ralph Homan, requested that members who expected to have papers for the state meeting notify him as soon as possible, as such papers must be first presented to the County Medical Society.

The program of the evening consisted of a report by the committee appointed to look into and to make suggestions in the matter of periodic health examinations of persons, in the interest of early diagnosis, detection and treatment of disease, and papers on this subject by Major Dailey and Dr. McCamant.

The committee, of which Dr. Laws was chairman, consisted of Drs. Laws, Cathcart, Swope, McCamant and Newman. It was the unanimous opinion of this committee that periodic health examinations should be encouraged, that they should be complete and that they should be made on some accepted form that covers the subject from all possible angles of disease. General blank forms of this character were submitted, including those of the A. M. A., of the U. S. Army, any of which were satisfactory. It was recommended that these forms be filled in duplicate, one copy to be filed by the examiner and the other to be given to the person examined without extra charge. It was the opinion of the committee that a fee of ten dollars for such an examination would be just and reasonable. This charge, however, would not include any fees to specialists, were examination by them deemed necessary, nor would it include any laboratory examination other than a qualitative analysis of the urine for detecting the presence of albumin and sugar. The committee recommends the use of the radio, the press and talks before civic organizations in the furtherance of the program for general periodic health examinations.

This report of the Committee was unanimously adopted on motion made by Dr. R. B. Homan.

MAJOR DAILEY, of William Beaumont General Hospital, then read a paper entitled "Annual Physical Examination in the Army." He stated that such an examination was made with a double purpose. Primarily it was for detecting in their early

stages physical defects for the purposes of correction, that the officer might be better fitted for the service; and, secondly, for the purpose of detecting defects that had advanced to such a stage as to disqualify the officer from the service. Such examinations had their starting point in 1907, when President Roosevelt discovered that many officers were getting "stale" and not keeping physically fit. He then issued an order requiring all officers of the grade of major and below to make forced marches on horseback of thirty miles on three successive days. In the army only the past year's medical history is obtained, as other years are already a matter of record. Two courses of anti-typhoid inoculation are required at three year intervals and smallpox vaccination every three years. Hernia is mandatory for operation. Wassermanns or Kahn tests not ordinarily done, only on admission to the army. A complete urinalysis is done only if it is available at point of examination, or if albumin is found present, or some other sign of kidney disease. The value of the physical examination depended on the knowledge, skill and thoroughness of the examiner. He did not think that group examination offered any advantage over that of a single conscientious examiner. He stated that he found that officers were eager to come up for subsequent annual examinations as they found their first one had been beneficial to them.

The second paper of the evening covering annual physical examinations was read by DR. McCAMANT. He stated that in the past few years so much publicity had been given to this subject that the laity, at least, is becoming thoroughly convinced of the benefits to be derived from such an examination, but that in the medical profession itself there were still many "doubting Thomases." He called attention to the reduction in infant mortality and to the reduction in the death rate of expectant mothers due to the Sheppard-Towner Act; to the improvement in physical and mental growth in school children since they have been under health control and to the reduction in death rate in large industrial plants, the time saved for actual labor, etc. on account of the supervision by the industrial surgeon and the industrial nurse. He thought the time was at hand when the physician should be a teacher as well as a healer. As to the ability of the average physician to make a thorough physical examination, there was no doubt in his mind but that any of us were fully competent. He thought that we should have uniform blanks for such examinations and that the person examined was entitled to a copy of the findings if so desired and that such a copy should also carry a summary of defects found and recommendations as to their relief.

The discussion of both these papers was opened by DR. LAWS. He was thoroughly convinced as to the soundness of such examinations for the public's own welfare, that when this Society went on record as endorsing such a movement it would raise itself in the opinion of the general public. He also believed that any member of this society is thoroughly competent to make such an examination. He thought that a uniform blank was necessary and that the patient should be given at least a summary if not a copy. He suggested that abstracts of both papers read should be given to the newspapers.

MAJOR GANDY: In a period right after the war, a large number of officers were found having considerable physical defects. This number has grown less and less with each succeeding year, showing that the physical condition of the officers has improved, undoubtedly through correction of defects previously found. The same thing would occur with the general public.

# RESEARCH FACILITIES

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DR. WAITE: A copy of the blank should always be given the person examined for various reasons, one being that he may live out of town and such a report would be of a help to a physician in making a diagnosis should he become ill. He suggested holding a clinic here to demonstrate to local physicians the modus operandi of such annual health examinations. He also suggested that the society have copies of the proposed blanks printed in the newspapers together with the cost of such an examination so that the public know what to expect. He thought also that the radio would be of help in bringing this matter before the public. He believed that the blank should be a uniform one.

DR. CATHCART thought that the public is ready and willing and that all it needed was for us to get busy and push it along.

DR. EGBERT. At a Bar Association meeting last week, a distinguished guest remarked that the medical profession was among the few professions that had kept up with progress. He wished this was fully so, but it is not. Heretofore we have been only interested in treating the sick and not caring about the well. Also, the treatment has not kept pace with our ability to make diagnoses. Why not take the public in our confidence and admit to them that it is easier for us to help keep them well, if they will give us the chance, than to get them well once they are sick. Send out cards to your clientele urging on them these annual health examinations.

DR. RAWLINGS believed that health examinations should extend from the cradle to the grave.

That the most important part of this examination is in infancy and childhood. By carefully watching the infant and child and correcting any defects that might develop, when manhood or womanhood is reached few defects are apt to manifest themselves.

DR. MILLER: Quoted from the "Life Extension Institute." Out of 100,000 native-born white adult males, all of whom had previously been examined for life insurance and were now re-examined.

Forty-five per cent were found to have infected or diseased tonsils.

Thirty-nine per cent had defective teeth.

Six per cent had hernias.

Two per cent had enlarged hearts.

Two per cent had mitral regurgitation.

Eighty-five per cent of these examinations were made by doctors in the field.

DR. McNEIL: He has been sold on the idea of health examinations and has been doing this kind of work since 1913. Five or six years ago he read a paper to the County Society on "Keeping the Well Well." You could not expect every doctor to become interested in this any more than you could expect him to be interested in other specialties. Only those so interested would attempt it. But the point now is to get the public interested in the value of such examinations. The ones coming now are mostly past middle age and are too old to be really benefited. Is in favor of only giving the patient a summary of your findings and advice as to corrective measures.

R. SWOPE: Thought that in the A.M.A. blank there should be a space provided for the hemoglo-

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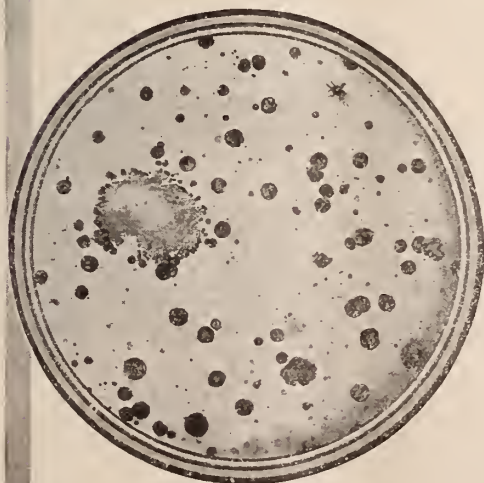
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The things unseen determine the cleanliness, uniformity and safety of Dextri-Maltose. From years of study and experience, we know how to produce the bacteriologically clean product indicated above.



On the other hand, the Petri-dish at the left visualizes the potential danger that may accompany lack of experience. At 37° C., this sample (bought in the open market) showed a bacteria count of 420,000 per gram (compared with 40 per gram in Dextri-Maltose, as mentioned above). Every physician is deeply concerned about the pasteurization, certification, etc., of the cow's milk his babies are fed on, but even sterile milk would give the infant *over seventeen million* bacteria per daily feeding when "modified" with a carbohydrate such as is represented by the Petri-dish at the left.



bin percentage. Other than that, he thought it answered every purpose. He allows the patient to fill in the History form himself and then in reading it over underscores with red ink points that need correction, that he may have them before him in making the examination. He believes in a uniform blank and that the patient should be given a copy.

**MAJOR DAILEY:** In closing the discussion said that if the examination is made thoroughly it is the same in the army as in civil life. It simply resolves itself into preventive medicine. The more examinations a doctor makes the more proficient he will become and the better satisfied client or patient will he have and he will eventually make a reputation for himself. Believes with Dr. Rawlings and Dr. Egbert that the patient must be taught to come back year after year and that to do the most good you must start with them young. As time goes on these examinations will become a routine in family life.

**DR. McCAMANT** in closing said he believed Dr. Waite's idea of having a clinic for instruction of doctors was a good one. He also agreed with Dr. Egbert as to taking the public in our confidence. He thought the work done in the free school clinic proved Dr. Rawling's idea. He also asserted that there was a business reason in giving a copy of the health examination to the person examined. It would create a desire in the other members of the family to have one. As to which form is used, he thought it was not so much the blank but the conscientious examiner that counted.

**Dr. Cathcart** made a motion, seconded by Dr. Laws, that the Secretary make arrangements with a bookstore or the Southwest Surgical Supply Company to keep on hand a supply of A.M.A. "Periodic Health Examination" blanks, so that they would be available for all members of the Society. Motion carried.

**Dr. Homan** made a motion that the Society go on record as endorsing periodic health examinations. Seconded and carried.

**Dr. Laws** made a motion that the secretary be instructed to give a synopsis of this evening's program to the press. Seconded. Motion amended by Dr. Egbert that the Secretary also be instructed to have printed in all three local papers a copy of the A.M.A. blank, stating that this was the blank adopted by the Society for such examination and stating the fee to be asked for such examinations, this to be in as an advertisement. Amendment seconded and carried. Dr. Laws' motion put to vote and carried.

Applications for membership by Dr. Frederick J. Fanning, Dr. Hugh Earl Rogers and Dr. Mildred Lee Merray were unanimously accepted.

**Drs. Laws, Cathcart, Swope and McCamant** were appointed as a Committee to find ways and means to give members of the Ladies' Auxiliary annual health examinations. The Committee immediately reported that its findings were to tell the ladies that any member of the Society, including the Staff of William Beaumont Hospital, would be glad to make such annual examinations.

The meeting adjourned at 9:50 p. m.

## EL PASO COUNTY MEDICAL SOCIETY

January 13, 1930.

There were 64 members and four visitors in attendance. Dr. Paul Gallagher, President, announced the appointment of the Program Committee as follows:

Dr. Ralph H. Homan; Dr. Chester D. Awe; Dr. John E. Morrison.

Applications for membership by Drs. W. R. Cur-

tis, R. F. Thompson, A. P. Black, B. H. Britton and C. F. Rennick were accepted.

The paper of the evening, "Etiology of Pellagra" was read by **DR. FRED LESLIE**. Dr. Leslie discussed very thoroughly, (1) the maize theory; (2) the silica theory; (3) the insect theory; (4) the infectious theory; and (5) the dietary theory. His summary was:

1. The etiology of pellagra is still unknown.
2. That Indian maize and silica play no part in its cause.
3. That no specific organism has as yet been isolated.
4. The pellagra to become endemic or epidemic depends on the diet of the community.
5. That pellagra may be caused by bacteria normally in the intestinal tract, elaborating a toxin which flourishes under a long continued low protein diet and cause pellagra.

Discussion was opened by Capt. Pratt, who stated that mild nervous and mental manifestations often precede the digestive symptoms by weeks and months. Two per cent of pellagrins manifest insanity. Pellagra in the insane magnifies their mental symptoms. Nervous manifestations vary from mild paresthesias to acute delirium and fulminating type of paresis. The histopathological investigations reveal no involvement of the sympathetic nervous system, but only a cellular neuritis and a sclerosis of the nervous tissues.

**DR. LESLIE SMITH** discussed the skin manifestations. He spoke of border line cases wherein the skin lesions are hard to find and should be searched for in cases of stomatitis. The border line cases and secondary or pseudo-pellagra should be treated as true pellagra and proper diet may prevent its development. Secondary or pseudo-pellagra sometimes follows chronic alcoholism or surgery with incomplete obstruction.

**DR. GARRETT** spoke of cases occurring in our immediate valley coming from conditions where you would hardly expect to find it. He thought that it undoubtedly was a deficiency disease and that any one presenting a picture of deficiency or emaciation, whether with a diarrhea or not, should be carefully examined for obscure areas of skin manifestation. In treatment, most of the cases that are not too desperate even in diarrhea cases, respond readily to a basic diet consisting of tomato, cabbage and spinach juice, milk, eggs, butter, cream. Other treatment is rather indifferent.

**DR. SWOPE** reported that in a three year experience in Mexico, on a high plateau, with about 5,000 Mexicans under his supervision, he never encountered a single case of pellagra, although the diet of these people consisted almost wholly of corn, beans and alcohol.

**DR. McCAMANT** spoke of the analogy of pellagra to Black Tongue in dogs; that ordinary canned salmon was found to cure dogs and so was tried on some pellagrins in an institution. Five to seven ounces was fed daily. All manifestations cleared up and there was no recurrence after 18 months on such a diet.

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**A**REPORT from the Department of Physiotherapy of a well-known New York hospital, dealing with diathermy in pneumonia and its sequelae, states as follows:

"As a rule diathermy is indicated in acute pneumonia, especially so when the symptoms are becoming or already are alarming: the temperature is high, the patient is delirious, the pulse is extremely rapid, cyanosis is deep, the respiration rate is high, the breathing is very shallow, and the cough remains unproductive. Not infrequently in a pneumonia case with such alarming symptoms, after a few diathermy treatments an entire change of the picture takes place: cyanosis lessens, respiration becomes deeper, the quality of pulse improves, the rate decreases, the

temperature is lowered, and the cough becomes productive. Auricular fibrillation that develops occasionally in similar pneumonias or other types of pneumonia where the toxemia is great, has been changed to a perfect normal rhythm after a few diathermy treatments."

You will value diathermy as an ally in your battles with pneumonia at this season, aside from the satisfaction derived from having utilized every proved therapeutic measure that present day medical science offers.

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## OFFICIAL HEALTH PROGRAM WOMAN'S AUXILIARY OF THE AMERICAN MEDICAL ASSOCIATION

### I. PUBLIC HYGIENE.

Fundamentals upon which Auxiliary work for improvement of public hygiene should be based:

- (1) Recognition of the fact that public health work is a highly technical job, requiring scientific, technically trained workers. That health work undertaken by lay women with no knowledge of the public health problem as a whole is necessarily fragmentary and ineffective.
- (2) Recognition of the fact that every state, county and city is entitled to a scientific full-time health department (organized not to treat the sick, but to prevent disease and promote health), adequately financed, free from political domination, and providing continuity of service to a trained personnel so long as work is efficient.
- (3) Recognition of the fact that the first and most fundamental job for lay organizations like the Auxiliary is to secure such scientific full-time health departments and adequate health protection, in their state, their county, their city or town.
- (4) Recognition of the fact that where efficient, full-time, scientific health departments do not exist (and only about ten per cent of the rural districts of the United States have anything approaching adequate health protection), health activities must be initiated and carried on by volunteer unofficial agencies; but that all such work should be so planned and administered as to serve as stepping-stones toward the full-time official health department, and that when the full-time official health department, with workers trained for public health work, has become an accomplished fact, lay organizations should support and cooperate with the official workers and should be willing to take orders from them.
- (5) Recognition of the fact that no health department, state, county or city, can do effective work without intelligent cooperation of the public; that such public cooperation depends upon wide-spread health education; that lay organizations can do this educational work, and are needed for it; and that the Auxiliary can be one of the most valuable tools for an official health department to use in this work, because it can by its education of the public concerning the official health department's work and needs, be the means of gradually eliminating or preventing political interference with an efficiently working department, and thus insure to it uninterrupted public service.

Most volunteer agencies do not yet realize the wastefulness of their individualistic efforts. One of the first things the Auxiliary should do is to work for a change of attitude in other volunteer women's organizations.

Health officials know that it is not always the work which makes the greatest emotional appeal to the public which most needs to be done. Unfortunately, most women do not know this. This is something the doctors' wives might well undertake to teach other women.

The National Auxiliary recommends, therefore, that each State Auxiliary undertake, under the direction and with the help of the Public Health

Committee of the State Medical Association and of its Advisory Council a study first of all of the fundamental principles of health promotion and disease prevention; second, of the set-up considered essential by public health experts for an effective state health department, of qualifications of personnel, adequate budget, and the like; and third, of the state health conditions; that it devise means of acquainting all the state board members with the result, and that recommendations for educational work by the county Auxiliaries be based upon the conditions found.

In states where all is well and where time has developed good official health machinery and good health conditions, general knowledge of the fact will tend to prevent interruption of the excellent work, and will be a source of satisfaction to the women of the state.


In those states where there is much yet to be done, this investigation will indicate what sort of work needs doing first. For example:

- (a) In those states which are not in the Birth Registration Area, the Auxiliaries would, without doubt, wish to tackle, as their first job, the ninety per cent birth registration problem.
- (b) In those states in which the state health department believes the "County Health Unit" to be the solution of the rural health problem, the county auxiliaries should be encouraged to take as their chief work such persistent and wide-spread education of the public as will gradually create a general demand for the full-time county health department.
- (c) In those states where the rural work is directly done "long distance" by the state health department, the county auxiliaries, if willing to work, and work under the directions of the state health department, can carry on intensive local health education work which would be impossible for the state department without intelligent local cooperation.

To those auxiliaries which agree with these ideas of study:

- (1) Vital Statistics. Their value .  
Compare the vital statistics of the state with those of other states.  
Compare the vital statistics of the different counties of the state.  
Compare the vital statistics of the cities with other cities in the state, and in the United States.
- (2) The State Health Department; its organization; and program:
  - (a) For general state work.

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- (b) For cooperating with the counties in improving county health conditions.
- (3) The value of the Public Health Nurse.
- (4) The County Health Unit as a possible solution of the rural health problem.

#### Community-wide Conditions Which Affect Health.

- (5) Milk:  
Milk standards, why necessary, what milk standards your community needs. How are these needs being met?
- (6) Housing:  
Your community housing laws.  
Housing conditions as they have developed under these laws and as they affect health.  
Improvements needed.
- (7) General Sanitation and its relation to the death and morbidity rates.  
Sewage disposal.  
Water.  
Garbage.  
Flies.  
Dust and street cleaning, etc.

#### II. PERSONAL HYGIENE.

The improvement of personal hygiene in any community is almost entirely a matter of education. Here again the Auxiliary members must first educate themselves before they can take a safe part in educating the public. The committee therefore recommends that the Auxiliary study programs shall include such subjects as:

##### Health Promotion:

- Prenatal care.
- Child welfare—infant and pre-school hygiene.
- School hygiene.
- Mental Hygiene.
- Social hygiene.

The advantage to the public of general compliance with health regulations.

The periodic health examination.

Control of communicable diseases.

The entire program should close with a survey of all the private agencies doing health work in the community, and a discussion of the possibility and desirability of centering the direction of all such work in a full-time, scientific health department, under which the private agencies, while still maintaining their identity, would work in complete co-operation.

#### PROPAGANDA FOR REFORM

**More Misbranded Nostrums.** The following products have been the subject of prosecution by the Food, Drug and Insecticide Administration of the U. S. Dept. of Agriculture which enforces the Federal Food and Drugs Act: Yumco Tablets (The Yum Products Corporation) containing sodium salicylate, acetphenetidin (phenacetin), baking soda, phenolphthalein, a trace of alkaloids and a laxative plant drug extractive. Kelp-O-Lite (Pacific Kelp Products Company, Inc.) consisting essentially of aluminum sulphate and water, with traces of calcium, iron, potassium and sodium compounds, benzoic acid and chlorides. Dakol Nasal Cream (New Haven Laboratories, Inc.) consisting essentially of petrolatum, with one-fourth of 1 per cent of chloramine-T, volatile oils including menthol and a small amount of saponifiable fat. Sun and Moon Sacred Ointment and Sacred Herb Oil (A. W. Lowrie, Inc.) consisting essentially of a petrolatum and fatty acid vase, with oils of sassafras, spearmint and wintergreen, while the herb oil consisted essentially of olive oil with oils of sassafras, spearmint and win-

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tergreen. Flumonia (Fuming) Salve (Van Vleet-Mansfield Drug Company) consisting of a petroleum jelly containing small amounts of menthol, camphor and oil of eucalyptus. Menth-Squillo (Mansfield Drug Company) consisting essentially of acetic acid, spirits of niter, menthol, a trace of red pepper, sugar, alcohol (6.8 per cent) and water. Chek-a-Cold Tablets (The Continental Drug Corporation) consisting essentially of acetanilid, red pepper and aloes. U-Rub-It (U-Rub-It Chemical Company) consisting essentially of petrolatum and bees-wax, with oils of eucalyptus, peppermint and sassafras, with menthol, oil of wintergreen and capsicum. (Jour. A.M.A., January 4, 1930, p. 50).

**Viosterol versus Cod Liver Oil.** Cod liver oil and viosterol solutions are by no means to be regarded as therapeutically equivalent. Cod liver oil cannot be replaced by the newer irradiated products except so far as the antirachitic factor vitamin D is concerned. Cod liver oil is also a carrier of the indispensable vitamin A. Furthermore, cod liver oil contains digestible and assimilable fats. (Jour. A.M.A., January 4, 1930, p. 53.)

**Resuscitations and Intracardiac Injections.** The power to revive the dead is one that the physician is often, but vainly, expected to exhibit. The alleged miracles of such revivals by injecting epinephrine into the heart are always widely reported in the newspapers. Physicians who have heard of these alleged resuscitations are tempted to employ the same means. If the death was real, no harm and no benefit results. Revival follows sometimes, perhaps not because of the treatment but in spite of it. In such cases there is indeed grave danger that serious injury may follow from the treatment that the patient has received. The evidence seems conclusive that, if the patient revives after such an intracardiac injection, he would have revived without it. Intracardiac injection is not a justifiable measure for resuscitation. (Jour. A.M.A., January 11, 1930, p. 107).

**Pancretone, Another Nostrum for Diabetes.** The Wabash Chemical Co. of Chicago exploits an alleged cure for diabetes called Pancretone. It also has as a side-line a number of other nostrums, such as Digestoids, Laxalets, Intesoids, Pilene, Virillo, Asthmatol, and Myrol. Pancretone is advertised on the free-trial treatment plan, common to diabetes cure quackery. According to the advertising for Pancretone, the diabetic who will take the preparation "requires no rigid diet regulation." He is told, however, that he must "not use Potatoes, White Bread, Sugar, Candy, Pie and Cake, Macaroni, Rice, Spaghetti and Beans, Dates, Figs, Bananas, Preserves and Jellies." The A.M.A. Chemical Laboratory examined a package of Pancretone consisting of tablets, and also a specimen of Laxalets and Digestoids. From its examination, the Laboratory concluded that "Pancretone" is essentially a "digestive tablet" containing an amylolytic enzyme, to which has been added considerable calcium carbonate and corn starch; that Laxalets are essentially a laxative combination, suggestive of aloin, belladonna, cascara and strychnine; and that Digestoids are essentially a digestive combination suggestive of charcoal, baking soda, saccharated pepsin, pancreatin and aromatics. It is obvious from the report of the analysis that any beneficial results that may follow the Pancretone "treatment" will be due to the rigid diet restrictions that are part of it. Any preparation that is so advertised as to induce diabetics to treat themselves without the advice of a physician is a menace. Pancretone belongs to this class! (Jour. A.M.A., January 11, 1930, p. 124).

**Phyllamin.** According to the advertising of Menley & James, Ltd., Phyllamin is "A Delectable Concen-

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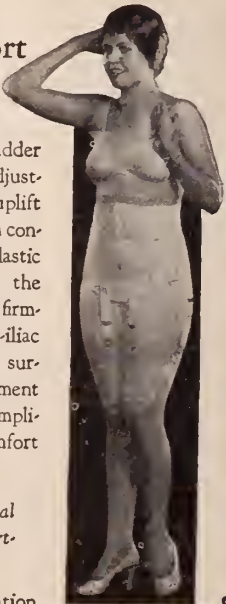
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trated Tonic Nutrient" and "Presents Fresh Summer Spinach Juice Cold Expressed." The preparation is claimed to contain "Chlorophyll and all the known five Vitamin Factors" and to represent "all the Mineral salts of vegetables and fruits conserved in pure honey." As is the case with many proprietary preparations claimed to owe the value to the presence of vitamins, the advertising makes extreme claims for therapeutic qualities but contains nothing to indicate that determinations of the vitamin potency have actually been made. The preparation has not been accepted for New and Nonofficial Remedies. (Jour. A.M.A., January 11, 1930, p. 127.)

**"Common Cold" Vaccines.** The nearest approach to a final proof that infections of the upper respiratory tract usually grouped under the term "common cold" are due to an unknown filtrable virus has been made by Dochez and his co-workers. This unknown filter passer is not contained in any currently exploited "common cold vaccine." (Jour. A. M. A., January 18, 1930, p. 189.)

**Armstrong's Oxy catalyst.** No scientific evidence worthy of the name appeared to sustain the claims for the Oxy catalyst, while there is increasing evidence that the exploitation of the product is much more concerned with economics than medicine. Two original ampules of Armstrong's Oxy catalyst were examined in the A. M. A. Chemical Laboratory. The contents of the Ampules were found not to hasten the discharge of a charged electroscope, indicating that the product was not radioactive. The Laboratory concluded that the specimens were nonradioactive preparations probably containing sodium chlorate, ferric chloride and sodium phosphate. (Jour. A.M.A., January 18, 1930, p. 208.)

**Lukutate.** This is another rejuvenating nostrum from the Orient via Germany. It seems to have run a somewhat hectic course in Germany. In due time, its value was correctly appraised, and the Germans appear to have relegated it to the limbo of futile fakes. Today, the Lukutate Corporation of America, is trying to convince the people of these United States that in Lukutate we have a rejuvenating substance of marvelous potentialities, but no definite information in regard to its composition is offered. It is stated that "The history of Lukutate is one of ancient lore and modern science, oriental jungle and European laboratory" and that "The basic ingredients are certain Indian fruits. . . ." It is claimed that for hundreds of years these extraordinary fruits have been known to the natives and have been eagerly sought by tribes and even animals of all sorts. An aphrodisiac slant pervades the advertising. An imposing array of German and Austrian testimonials forms a part of the "come-on" advertising of Lukutate. However, articles in German medical and pharmaceutical journals indicate that physicians in that country are far from being as enthusiastic over Lukutate as the American public is led to believe. The results of official investigation of Lukutate in Austria were to the effect that the main ingredients were fragula (buck thorn) and cascara sagrada and that, therefore, the Lukutate products were to be regarded as medicinal preparations and their sale seems to have been prohibited in Austria. In the United States testimonials for Lukutate seem, at present, to be much less imposing. The A.M.A. Chemical Laboratory examined specimens of Lukutate Tincture purchased from the Lukutate Corporation and found it to be essentially an aqueous-alcoholic solution of plant extractives, one of which is indicative of an emodin-bearing drug, such as cascara, senna, or buckthorn, and containing a small amount of fruit sugars (fructose). (Jour. A.M.A., January 25, 1930, p. 281).

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Effects of Cinchophen. Purpuric, urticarial, or scarlatiniform eruptions have been reported by many observers following the administration of cinchophen. They may occur with or without edema. Gastro-intestinal disturbances, from epigastric discomfort to acid eructations and heartburn, are the commonest expression of intolerance to cinchophen. These may be avoided by the giving of an abundance of water with the drug, and 1 Gm. of sodium bicarbonate, though the latter should be given separately and not mixed with the drug. By using neocinchophen, one may avoid usually the symptoms of gastric irritation. Sometimes cardiovascular disturbances have been noted. By far the most serious results of cinchophen intoxication result from injury to the liver, which may even go on to a fatal acute yellow atrophy. (Jour. A.M.A., January 25, 1930, Pp. 283).

Cod Liver Oil, Viosterol or Sunlight for Rickets. Cod liver oil, viosterol and ultraviolet rays are generally accepted as specific agents in the prevention and cure of active rickets in infants. Their relative merits are still under investigation. Cod liver oil contains the valuable vitamin A in addition to vitamin D. Viosterol is of advantage because of the ease of administration and its concentration. Ultraviolet rays are undoubtedly a valuable therapeutic agent when under controlled supervision. Their effect on general nutrition and resistance as well as on the calcium retention is good. Their use to the exclusion of vitamin D or viosterol seems unwise. A combination seems most desirable when sunshine is not available. (Jour. A.M.A., January 25, 1930, p. 283).

#### BOOK REVIEWS

TUBERCULOSIS AND HOW TO COMBAT IT (A Book for the Patient)—Francis M. Pottenger; A.M., M.D., LL.D., F.A.C.P.; Monrovia, California; Second Edition; St. Louis; The C. V. Mosby Company; 1928.

Men who have had much experience in treating tuberculosis realize that an understanding on the part of the patient of the problems connected with tuberculosis is one of the most important agents operative toward full recovery.

There is probably no book and no pamphlet which will take the place of the physician's talks with his patient. A book written for the patient in language which the patient can comprehend can be of tremendous assistance to the physician. Such a book Dr. Pottenger has prepared. There are a number of such books on the market, but, probably none which excels this one. Pottenger has a very apt way of expressing his thoughts so that the lay man can understand them. He also knows what ideas and comprehensions the patient should have about tuberculosis.

Pottenger is a physiologist as well as a phthisiologist. The author does a great deal of writing but his manuscripts are not always as carefully edited as they should be. As we have said before, in reviewing some of his books, he needs some one who will closely edit his manuscripts. His punctuation is poor; however, these do not detract from the value of the book.

O. H. B.

THE OUTLINE OF PREVENTIVE MEDICINE—FOR MEDICAL PRACTITIONERS AND STUDENTS. Prepared under the auspices of the Committee on Public Health Relations, New York Academy of Medicine. 21 Contributors. Editorial Committee: Frederic E. Sondern, Chas. Gordon Heyd, E. H. L. Corwin; Paul B. Hoeber, Inc., New York. Price \$5.00.

The Outline of Preventive Medicine is different

from most books on the subject. The chapters deal with basic facts on the subjects treated. The contributors are all leading medical men and women of New York City or its environs. All are college teachers. Among the well known names are Harlow Brooks, Robert A. Cooke, Charles L. Dana, Alice Hamilton, Samuel W. Lambert, James Alexander Miller and others.

The book is splendidly edited and is well worth the reading of every person interested in preventive diseases.

O. H. B.

THE PHILIPPINE JOURNAL OF SCIENCE, Vol. 39, Nos. 1-4, May-August, 1929, is devoted entirely to Filterable Virus and Rickettsia Diseases, by Dr. Earl Baldwin McKinley.

Dr. McKinley presents this most fascinating subject in a comprehensive manner. The chapter on bacteriophage is particularly interesting. The entire volume is worthy of careful study.

It is paper covered, has 416 pages and an index and sells for fifty cents. It may be ordered through the Business Manager, Philippine Journal of Science, Bureau of Science, Manila, P. I.

O. H. B.

MEDICAL STATE BOARD QUESTIONS AND ANSWERS. By R. Max Goepp, M.D., Professor of Clinical Medicine in the Graduate School of Medicine, University of Pennsylvania. Sixth Edition, thoroughly revised. Octavo volume of 754 pages. Philadelphia and London: W. B. Saunders Company, 1929. Cloth, \$6.00 net.

Those who find it necessary to prepare themselves for state board examinations commonly use this book and find it a great service. The first edition of this book appeared in 1908. Since this time it has undergone 24 reprintings, a testimonial to its usefulness.

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Delegates to Texas State Medical Association,—Drs. W. L. Brown and T. J. McCamant; Alternates, Drs. W. W. Waite and R. L. Raney.

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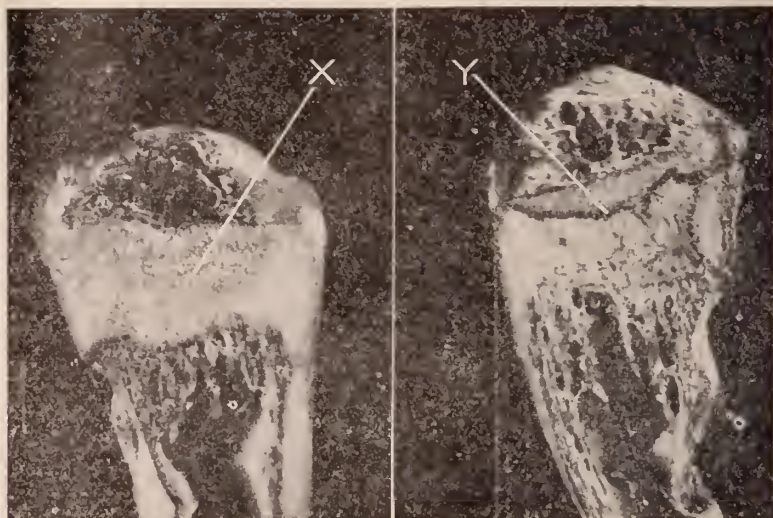
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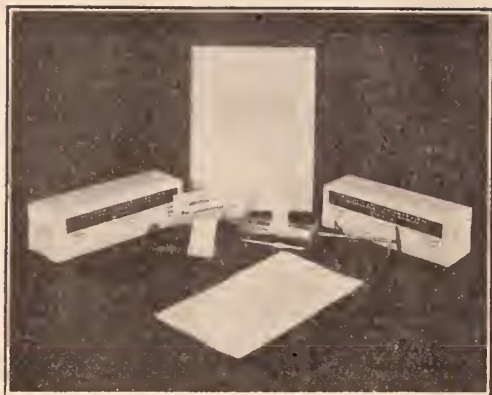
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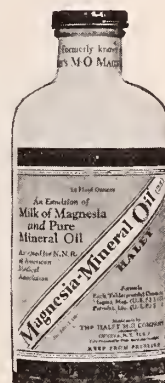
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## RINGWORM INFECTION OF THE HANDS AND FEET: A CONSIDERATION OF ITS RECURRENCES

LESLIE M. SMITH, M. D.  
El Paso, Texas.

(Read before the Medical and Surgical Association of the Southwest, at the fifteenth annual meeting, held in Phoenix, Ariz., Nov. 7 to 9, 1929.)

The superficial fungus infections of the hands and feet, commonly known as ringworm, eczematoïd ringworm, or dermatophytosis, are becoming more and more prevalent, due probably in large measure to the increasing use of gymnasiums, club houses, and public swimming pools. The prevalence of the infection is indicated by a recent survey of freshman students in the University of California. Legge, Bonar, and Templeton<sup>1</sup> found, among 3100 freshman entrants that 53.3 per cent of the men and 15.3 per cent of the women students were infected with ringworm of the feet. When one considers that at least a small per cent of those infected will be disabled for a time, one realizes the importance not only of getting the patient rid of the visible evidence of the disease and the annoying itching, but also of eradicating the dormant foci of fungi, and otherwise eliminating as far as possible the possibilities of recurrence.

It is not difficult in most cases for one familiar with the disease to clear up the gross signs of the infection and the subjective symptoms. After this the real problem begins. The difficulty of completely eliminating the fungus from the skin results in frequent recurrences of the eruption, and the neglect of outside sources of contamination means reinfection of the patient and spread of the disease to other susceptible persons.

At the present time a good proportion of

physicians recognize, or at least suspect, this type of infection, and are able to treat the disease successfully up to a certain point, that point where the gross lesions disappear. Too often this is the end of treatment—until the recurrence, which is very likely to come; so likely, in fact, that someone has said it is necessary to burn the clothes and boil the patient in order to cure the disease permanently. If we will be thorough in our treatment and attend to the causes of recurrences our view of ringworm of the hands and feet becomes much more optimistic.



Fig. 1. Ringworm. Non-itching epidermal collar. Scales from these are often loaded with mycelia.

One of the most common causes of recurrence is a low grade infection which causes no pruritus and no noticeable lesion except an occasional small scale or circular collar of epidermis (Fig. 1). This may be the remnant of a more severe infection which treatment almost cured, or the infection may have been from the start a very mild one. These cases are often not treated, hardly even noticed by the patient, but are sources of in-



fection to others and cause repeated recurrences in the patient. Even without treatment they will often disappear, but the organisms are still present and will cause trouble at some time when conditions are favorable to their growth. If the physician will be on the lookout for this type of lesion in all his patients, he will discover many mild cases of ringworm which may be attended to before they cause annoyance. These lesions are most often found on the fingers, toes and palms. Between the toes there may be a very slight scaliness or an area of macerated skin which had never been noticed by the patient. (Fig. 2).



Fig. 2. Ringworm. A slight scaling between the toes which often passes unnoticed.

Another often neglected lesion is the mycotic onychia or infection of the nail. This may be present as a marked thickening of the nail with piling up of epidermis beneath the free border, or there may be a slight involvement with only discoloration (Fig. 3). The latter may easily be overlooked. If ringworm of the hands and feet is treated and the nail infection ignored this serves as a source of reinfection of the skin. Williams and Barthel<sup>2</sup> of the New York Skin and Cancer Hospital have found nail infection to be frequent and a common source of recurrence of the skin lesions.

It is my opinion that there are a great many ringworm carriers, individuals who habitually harbor the organisms without developing active infection themselves. These persons I believe to be foci for the spread of

the disease to others, and in time they will probably develop the disease themselves in an active form. In my work at the El Paso City-County Clinic I decided to examine a

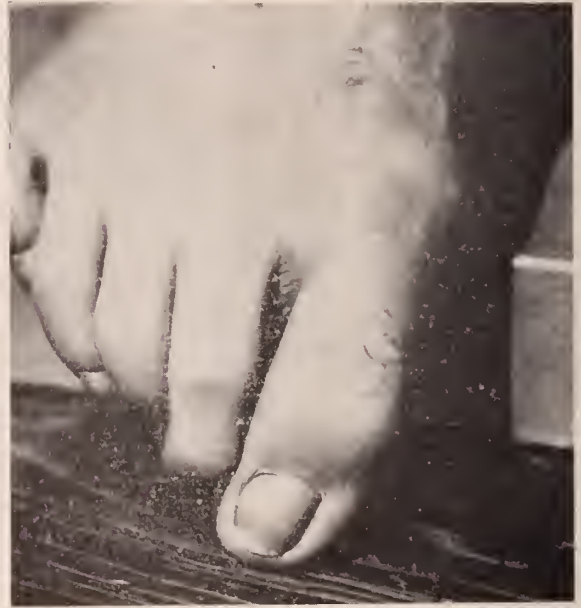


Fig. 3. Epidermal collar at edge of first interdigital space, and slight involvement of nail. Fungi found in scale. No subjective symptoms.

number of apparently normal toes, if such could be found, for the presence of fungi. The difficulty of finding normal toes among these clinic patients is considerable. Most of the patients are Mexican laborers and their families. Their personal hygiene is of an extremely low order, and active ringworm of the toes is almost the rule. After much searching ten patients were found who, as far as the eye could tell, had no infection. These had had no itching, and there were no scaling, maceration, or other signs of infection. Those patients who had even the slightest scaling were not used. Epidermal scrapings were taken from the fourth interdigital space of the foot and mounted in 30 per cent potassium hydroxide for microscopic examination. Of these ten apparently normal feet, five were negative, one showed an abundance of yeast-like organisms, and four showed branching mycelia resembling those found in active ringworm of the extremities. No attempt was made to classify the organisms further. While the organisms are existing here as saprophytes, I believe these cases are potentially active ringworm infections, depending on proper conditions for growth and infection.

I have so far considered the causes of recurrence about the patient himself. There are other important reasons why ringworm

recurs. Various articles with which infected parts of the patient's skin have come in contact may hold small scales containing fungi. These organisms are notoriously long-lived. In order to have some first-hand information concerning their longevity, I obtained some thin scales from an active foot infection, placed them between two clean glass slides and kept them in a dry place for three months. At the end of that time the laboratory succeeded in growing both a tinea and a yeast colony on Sabouraud's medium. It is very likely that the organisms will live in detached scales for much longer. Therefore, such articles as gloves, sox, bath mats, slippers, rugs, bath room floors, broom handles, tools, automobile steering wheels and brake handles, and others which might be contaminated should receive attention. Some of these can be sterilized in formaldehyde vapour; others will have to depend on soap and water; some that cannot be sterilized should be discarded. Those articles which can be, should be boiled.

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### RAGWEED HAY-FEVER IN THE SALT RIVER VALLEY—SECOND NOTE

E. W. PHILLIPS, M.D.  
Phoenix, Arizona.

(Read before the Maricopa County Medical Society, at Phoenix, Ariz., at a regular bi-monthly meeting.)

Last year I called attention to certain changes which are taking place in the distribution of pollen disease in central Arizona. The most important of these changes is the development of a definite autumnal hay-fever season caused by the pollen of the slender false ragweed, *Franseria tenuifolia*.

This year (1929) I returned early in October and found a number of patients seeking relief from autumnal hay-fever. Two-thirds of these patients had been treated with an extract of the pollen of Bermuda grass in April and May, and had obtained complete relief. They had been free from symptoms during the summer, receiving no further treatment. At some time in September, the exact date varying from the fifth to the twenty-fifth, their hay-fever had recurred. In most cases the symptoms were severe, several having asthma when they first reported for treatment. The records of those who had been tested recently showed some sensitization to *Franseria*, and in all

of these recurrent cases there was a positive reaction to this pollen by the intradermal test.

The other group, about one-third of the total number, were not Bermuda-sensitive. Several had required treatment last spring, or in earlier years, with the pollen of the rabbit bush, *Franseria deltoidea*, during the short period of its pollination in March. Some had been treated last fall with valley ragweed. Their autumnal hay-fever was similar in onset and in severity to that experienced by the group who were also sensitized to Bermuda grass.

It was interesting to observe that less than half of the patients of each group had a history of ragweed hay-fever before coming to the Valley. The others, including several children born in Arizona, must have developed sensitization here.

A hurried and incomplete survey of the Valley pollen plants showed that the slender false ragweed was in full bloom. The area infested by this plant was much greater than in former years. There were found, at the edges of the city, whole fields of it. Patches of it occurred along the roadsides, much as the true ragweed grows in the East. These were found well beyond the limits of irrigation; in fact, I collected specimens as far north as Hillside.

The plants showed extraordinary variability in size and in conformation, possibly as the result of differences in soil and in moisture. The Valley specimens were identified by Mr. Robert H. Peebles, a botanist in the Government Service, as *Franseria tenuifolia*. This agrees with identifications made in earlier years by Dean Thornber and by Professor Hall. There is more or less western ragweed (*Ambrosia psilostachya*) in this region, and it grows, in some places, along with the *franserias*, and pollinates about the same time. I have not been able to demonstrate that there is any true short ragweed in the Valley; some observers think that there is. It is not of present importance, for undoubtedly the false ragweed is the dominant species, and it caused this year's autumnal hay-fever. It grew vigorously and went to seed; we may look for still more of it later. Patches in different parts of the Valley varied in their degree of maturity, which probably explains the irregularity of the dates of onset; but they all went to seed about the last of October.

The treatment was simple. The intradermal test of 0.02 c.c. of the 1:5000 dilution of valley ragweed pollen extract was the initial dose. Daily doses, increased as rapidly as the patient's tolerance allowed, were giv-



en by the intradermal method. Relief occurred in all cases, and usually it was prompt; but a few patients had to be protected from the pollen for a few nights, by a glycerin mask, by dampened sheets hung over the windows of their rooms, or some such device.

The pollen extract used for tests and treatment was made from naturally ripened pollen, collected from wild plants growing in the Valley. This pollen was carefully freed from dust and plant detritus, and its fat was removed, before extraction. It has been my experience that such preparation is necessary in making an extract that is stable and of standard potency.

A few of the Bermuda-sensitized patients received some doses of that pollen, along with the ragweed, but the Bermuda was soon discontinued. Obviously, it was not needed. If these people had gone comfortably through the summer they could hardly be suffering from the dwindling quantity of Bermuda pollen in the air in the fall.

#### SUMMARY

Autumnal hay-fever caused by the pollen of the slender false ragweed, *Franseria tenuifolia*, is present in the Salt River Valley. The season is fairly definite, beginning about the middle of September and ending late in October.

The number of persons affected is not great, but is increasing yearly. The offending plant is extending its distribution in vacant lots and along roadsides.

Persons who have had hagweed hay-fever from true ragweed, before coming to Arizona, are liable to be affected by the false ragweed; but in more than half the cases observed the sensitization developed in this region.

Patients who, after treatment with Bermuda grass pollen extract in the spring, have been comfortable all summer but have recurrence of symptoms in the fall, are usually sensitized to false ragweed. They then need treatment, not with Bermuda grass pollen extract, but with that of the false ragweed.

Sufferers from autumnal hay-fever in the Phoenix neighborhood were easily relieved during the attack by the intradermal injection of the appropriate pollen extract.

I am indebted to Mary C. Phillips, A. B., for valuable assistance in mapping the distribution and collecting the pollen of the Valley ragweed.

#### REFERENCE

1. Phillips, E.W.: Ragweed Hay-Fever in the Salt River Valley. *Southwest. Med.* XII-2-49. (Feb. 1928).

## SOME DETAILS IN THE TREATMENT OF HEART DISEASE

WILLIAM DOCK, M.D.

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(Read before the Medical and Surgical Association of the Southwest, at the fifteenth Annual Session, held at Phoenix, Ariz., Nov. 7 to 9, 1929.)

To those who are particularly interested in treatment of patients complaining of symptoms referable to the heart, details of diagnosis are of little importance. The arteriosclerotic patients may respond differently from rheumatic ones, but the plan of treatment in both is the same, and in either the details must be altered to fit the symptomatic, not etiologic, classification. When heart failure occurs, the chance of improving the condition by medication is greater if the patient has recently developed a wholly irregular pulse, but the treatment of auricular fibrillation is not a different chapter from the treatment of heart failure without arrhythmia. However, one etiologic factor, hyperthyroidism, will be sought because of its importance in therapy. Any cardiac patient, without obvious valve lesion, who is alert, with soft, pigmented, moist skin, slight flush, and rapid pulse or arrhythmia or high pulse pressure, should be suspected of hyperthyroidism, until it is disproved, since proper surgical intervention can relieve most of the thyroid group of cardiac patients of present distress and reduce the risk of future invalidism.

In treating a patient with congestive type of heart failure, it is usually wise to begin with a period of complete rest, and in the severe cases this is absolutely necessary. Strict bed-rest is preferable, but it is oftener more exertion for the patient to use a bed pan than a bedside commode, and in patient with prostatic disease, acute retention may result from enforcing continuous confinement to bed. The position of the patient in bed is very important, since many of them are comfortable only when sitting up. The hospital cardiac beds are convenient for this, but it is possible, by having the patient's feet against the foot of the bed, a pillow under the knees, and a back rest of pillows and boxes extending to the head of the bed to furnish firm and comfortable support even for the patient at home. If the patient is merely propped up on pillows in the center of the bed, most of his time is spent in tiresome sliding and climbing.

The diet during the first day or so may be light or liquid, but as soon as possible, unless the patient is overweight, he should be getting full diet, in several moderate-sized feedings, chiefly carbohydrates, with adequate

fresh fruit juice, dairy products and vegetables; greasy and "rich" items should be omitted. Even in obese patients, a carbohydrate diet with sufficient vitamin content should be provided. As little salt as possible should be given with the diet. The fluid intake need not be markedly restricted, but no water should be left at the bedside or within sight of the patient, so as to avoid stimulation to excess fluid intake. In thirsty mouth-breathers, it may be necessary to allow only a limited intake, with cracked ice to suck every twenty minutes. In moist, cool weather, thirty-five to fifty ounces daily total liquid intake is quite comfortable, but in dry, hot weather this may cause distress. A record of intake and output of fluid, and frequent weighing of the patient, is useful in controlling therapy.

Digitalis is the one drug which is of importance solely because of its action on the circulation. It has several distinct effects upon the circulation, as well as toxic actions which are well known. It increases vagus tone, which tends to slow the sinus rate and the conduction from auricle to ventricle. It improves the efficiency of cardiac contraction so that less energy is required to pump a given amount of blood. It increases the speed and force of cardiac contraction, but only when the heart is dilated or failing. Also, it slightly diminishes the return flow to the heart by action on the peripheral circulation. In auricular fibrillation, the vagal and direct action on conduction from auricle to ventricle causes marked slowing of apex rate in most cases. When the beat is regular, digitalis may not produce any slowing. It rarely does so in fevers, anemias, and hyperthyroidism.

Digitalis should be given, sooner or later, to most cases of congestive failure. In fibrillation and when the condition is critical, it should be given at once; in other patients, one can estimate the value of the drug best by withholding it for a few days. The speed with which full effects are to be produced should vary with the seriousness of the need for the drug. In rapid fibrillators I should expect to secure full effects in one to three days; in patients who are not critically ill in three to six days. The average requirement is four drams of tincture or twenty-four grains of powdered leaf per 100 pounds, but the variation from patient to patient is close to twenty-five per cent in each direction. Give one-half of the required amount in one dose, in urgent cases one quarter more in six hours, and then three grains every six hours until the apex rate is slowed to eighty, or the patient has toxic symptoms such as

diarrhea, coupled beats or nausea. If the patient has had abdominal pain and nausea previously, the digitalis nausea can usually be distinguished by the dizziness and headache which accompany it. In less acute cases the drug can be given in three grain doses three times a day for two days, twice a day for two or three days and three grains, or one-half dram, daily until one gets evidence of toxicity or full clinical effectiveness. If toxic symptoms occur, omit for a day or two and then resume the same sized doses at longer intervals, five days a week, or every other day, as needed to maintain the full effect.

Fibrillators who have done well on digitalis need to be rationed, with the largest dose they can take, for months or even years, and discontinuing may cause heart failure. When the heart is regular, digitalis can be discontinued only if it does not benefit the patient, or when he has returned to a stationary condition. It should be begun again, in full doses, if its withdrawal causes aggravation of symptoms. The cardiac must be educated in regulating digitalis as the diabetic is for insulin. When the patient has had digitalis before beginning treatment under your care, smaller doses may suffice to produce results, although in my experience daily doses of twenty to thirty drops from a dropper are equivalent to no medication. Either use powdered leaves, or tincture measured from a minim glass, if you wish to get results. Even accurate medicine droppers give from 120 to 300 drops instead of sixty to the dram. Do not divide your dose up, but give it once a day for maintenance. It is cheaper, if you use powdered leaf, surer if you use tincture, to give only one dose a day. Some patients prefer bitter taste to the pill sensation, but if possible, I use powdered leaves. There is no need for purified forms or extracts when giving the tincture by rectum, as is sometimes necessary in fevers, after operation, or with severe gastric disturbances.

Next to digitalis, morphine is our most needed drug. It is invaluable during the first day or two of treatment of severe decompensation, as well as for acute attacks of pulmonary edema or of severe pain in coronary arterial occlusion. By greatly diminishing activity and anxiety, it rests the patient and decreases the work of the heart, but it makes him more cyanotic and his breathing more irregular. It is rarely wise to use more than two one-fourth grain doses of morphine per day in congestive failure, but more may be used after coronary occlusion. Caffeine is of value as a respiratory stimulant, when the patient is being disturbed by the overbreathing periods of



Cheyne-Stokes respiration, and as a general stimulant in collapse. It should be given intramuscularly in four to ten grain doses of the sodium salicylate or benzoate. If these have to be repeated frequently, they may produce or exaggerate as "cardiac psychosis" or manic state. Camphor, carbiazol and coramine are worthy of trial as stimulants, although they are rarely superior to, and often less effective than, full doses of caffeine. Digitalis action may be reinforced for a few hours by intravenous injection of ten cc. of 10 per cent calcium chloride, but this is not often indicated.

Diuretics are often important, either as support to digitalis, or for use after it has done its best, whether successfully or not. Theocine by mouth, seven grain doses two to three times in one day, and repeated not oftener than every third day, gives a very satisfactory diuresis and is usually quite as effective as its expensive cousin, euphyllin, and more so than mercurial diuretics, in many patients. Occasionally when theocine (or the less effective but better tolerated theobromine, in ten grain doses thrice daily) seems unsatisfactory, we see good diuresis from the mercurial diuretics, salyrgan or novasurol, given intravenously in one or two ccm. doses, one to three days apart. The mercurial diuretics are most effective if the patients are kept acidotic by large doses (six to ten grams daily, usually divided into eight hourly doses) of ammonium chloride or nitrate, or calcium chloride. These drugs alone may produce a moderate diuresis. I prefer ammonium chloride, ten grains every hour for ten to fourteen doses daily, but all of these drugs cause gastric distress. The mercurial diuretics must be avoided if diarrhea is present or if they produce bowel symptoms.

Last, but not least, we come to the mechanical procedures which are so valuable in heart failure. First, is venesection, which is unapproached for giving quick relief in cases where orthopnea, pulmonary edema, or swollen liver are outstanding features. It is useful during the first few hours even when fibrillation is present and relief within a few days, under digitalis, seems certain, more useful in failure without irregular pulse, or in patients who respond poorly to digitalis and diuretics. Most diuretics work better after a bleeding. The easiest and most successful technic is to use a twelve to sixteen gauge needle with eight to ten inches of tubing applied over the butt of the needle, not with an adapter. Never use a tourniquet, with its uncertain pressure, but keep a blood pressure cuff at sixty mm. mercury or on up to ten mm. below diastolic pressure

during the venesection to secure the freest flow. The rubber tube should hang straight down into a graduate, and 500 to 800 c.c. (eighteen to twenty-four ozs.) should be withdrawn to produce a satisfactory fall in venous pressure.

It is wise to slap the cardiac on the back every morning to see whether he has fluid in the chest and, if so, how much. When flatness reaches above midscapula, he usually should be tapped. In patients with fibrillation, recently come under your care, marked hydrothorax may take care of itself, but if it does not, much relief can be obtained by removing fluid. Some cardiacs require repeated abdominal paracentesis, and this also is a procedure which often makes possible a good result from diuretics. I prefer mid-line taps, with a gallbladder trocar and attached rubber tube, but puncture above the left iliac crest is better borne by some individuals. Occasionally, in patients with massive edema resistant to every form of therapy, hanging the legs out of bed and allowing fluid to drain from two to four skin incisions, two to three inches long at the level of the malleoli, will turn the scale and initiate diuresis as well as directly reducing the amount of stored fluid.

If patients fail to gain under rest, proper diet and medication as suggested above, one is reduced to keeping up the battle, maintaining strength by proper care of the bowels, relief of indigestion and sedatives to produce sleep. Spontaneous improvement may begin after weeks of discouraging progress. I prefer using no powerful cathartics, although some men believe in calomel for resistant cases of anasarca. Small doses of cascara, phenolphthalien, or mild morning saline cathartic are usually adequate to avoid hard stools, and produce little abdominal distress with attendant fear of eating. Paraldehyde by rectum, or with ice by mouth, chloral, veronal and phenobarbital are all worth trial to produce comfortable sleep.

The use of quinidine to effect restoration of regular rhythm in auricular fibrillation, is best confined to patients who have had this disorder for only a few days, or who have been well prepared by digitalis, so as to regain as much cardiac reserve as possible. While the risk of accident is small in patients who are ambulatory and comfortable, the improvement produced is variable and sometimes negligible if the patient had a slow pulse under digitalis. Recurrence of fibrillation is not uncommon, even when patients take quinidine daily to maintain a regular rhythm, and decompensation may occur when fibrillation returns. Usually the drug is giv-

en in capsules, beginning with three grains three or four times daily, and increasing by one and a half grains per dose each day until the patient is distressed (usually this will require nine to eleven grains four times daily) or until regular rhythm occurs. The latter is often preceded by a few hours of tachycardia which is sometimes alarming.

When patients begin to improve, one is faced with the problem of exercise and, later, return to work. When actual heart failure has occurred, the patient should be eating well, sleeping well and free from dyspnea for five to ten days before allowing him to move about his room. He should begin his convalescence by sitting in a chair for fifteen minutes two or three times a day, increasing this so that within one or two weeks he is sitting up for all meals, lying down for one-half to two hours after each, and walking on the level or sitting up as much as he desires outside of these fixed periods, with ten hours bed rest at night. One should clear up any serious sources of future trouble, such as abscessed teeth, pelvic or prostatic disease, before convalescence is over.

The recovery of function in patients with fibrillation, valvular lesions, or recent coronary accidents, is sometimes more rapid and complete than in those with less serious heart disease complicated by poor physical condition, obesity or a sensitive nervous system. However well they feel during convalescence, they should be urged to avoid fast climbing, lifting, and all competitive athletic events. Recurrence of edema of the ankles, cough, or nocturnal dyspnea, indicates need for more rest. Prolonged exposure, fatigue, exercise after meals, heavy meals alone, and intercurrent infections, are likely to bring out symptoms or lead to a serious relapse. Sexual intercourse should be avoided at times when the patient is tired and the act likely to be prolonged. I believe cardiacs are better when they have regular mild exercise, with rest after meals, but of course they must never push themselves if exercise causes distress. They should maintain their weight at, or slightly below, the "ideal weight" for age, sex, and height.

Another group of therapeutic problems which deserve mention is centered about the border-line cases. First, those with irregular, or enlarged hearts, with hypertension, or with definite diastolic murmurs, but with no distress on exertion or other symptoms of heart disease. For these no digitalis is needed but advice to avoid competitive sports and undue fatigue. Often this advice is ignored without evidence of damage and the first break in compensation comes as a result of

upper respiratory infection. Hence, tonsillectomy may be of some value in selected younger patients with such troubles. In the next class for treatment are the individuals with many symptoms but no physical evidence of heart disease or a cause for heart disease, and those with some physical evidence of heart damage who have had only mild symptoms of functional insufficiency. The patients with angina pectoris may also be placed in this class. These patients sometimes are helped by an initial brief period of bed rest, followed by the same regime of avoiding exertion but obtaining regular exercise, which I have outlined for those convalescent from congestive failure. Exercise may be increased only very slowly in some of the patients, particularly those without physical evidence of heart disease for whom the diagnosis of "poor training," or "heart tire," "effort syndrome," etc., may be applicable. The slower the recovery of function, the more important is mid-day rest, avoidance of late hours and heavy evening meals in future life. Obesity, and chronic infection of mouth, tonsils, or elsewhere (notably pulmonary tuberculosis, presumably inactive) may be important complications in this group. Drugs are of little value, except sedatives and those with psychic appeal. Arsenic and digitalis may act in the latter fashion. Whether the patient actually has early heart disease, or not, is unimportant in therapy, for the treatment is based on symptoms, and emphasis on heart disease may introduce a psychic obstacle to recovery. Patients of this type who believe they are likely to die soon from heart disease will either neglect themselves or, by too great caution, produce actual damage from failure to maintain good physical tone.

It is apparent that the heart is somewhat damaged by all acute infections, and it is put to an unusual strain by operation and blood loss. However, the role of true heart damage in infections and operation has been greatly exaggerated. Most patients with heart disease, even those who have had, or still have, some evidence of failure, bear operation well. Yet many patients with normal hearts show tachycardia, cyanosis and fall of blood pressure after prolonged operation. These disturbances are peripheral in origin, and, while full doses of digitalis by rectum, or strophanthus by vein, may help to raise blood pressure, the safe, wise and rapid method of treatment is saline infusion or blood transfusion, perhaps also some overbreathing with oxygen-carbon dioxide mixtures. Later on after operation, paralytic ileus, dilation of the stomach, or pulmonary infarction may cause symptoms suggestive of heart failure. These symptoms are rarely cardiac in



origin, and respond poorly to cardiac medication, which often is used instead of appropriate measures. Similarly, in infections, peripheral circulatory collapse is not uncommon, and is best treated by transfusion and repeated small doses of epinephrine. In pneumonia, particularly in elderly people, full digitalis dosage or venesection has often seemed to save life. Probably, even in these cases, proper oxygen administration would have been more effective.

In summing up, let me urge that we abandon the simile chosen by the illustrious Corvisart, who likened the cardiac to Virgil's soldier "fixed in whose side was the lethal shaft." Heart disease is not often immediately or progressively fatal, but goes by remissions and exacerbations. During the latter, our best measures may prove unavailing and still, in some cases nature will gradually restore the balance. We must never state a definite time of survival for a patient even when things seem most desperate, but maintain in ourselves and in our patients a feeling of cautious optimism.

## ABDOMINAL SYMPTOMS DUE TO CARDIOVASCULAR DISEASE A DISCUSSION OF POSTMORTEM CASES

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(Read before the Medical and Surgical Association of the Southwest, at the fifteenth annual meeting held at Phoenix, Arizona, Nov. 7 to 9, 1929.)

That heart failure may cause digestive disorders is well known. The role of arterial disease in abdominal symptomatology is not so much appreciated.

In the first place, it must be understood that practically any blood vessel in the body may become painful when an adequate stimulus is applied. Nearly all of the hollow viscera become painful when over-contracted, over-distended, stretched, or when irritated by certain chemicals. Injection of warm water under pressure into the gall ducts causes suffering; barium chloride injected into the lumen of an artery causes spasm of the vessel walls and pain.

A sclerotic artery cannot contract, relax or bend easily, and for these reasons may, more readily than the normal artery, become irritable and hypersensitive, and thus may become a focus for afferent impulses, just as much as a gastric ulcer or an inflamed appendix. Sudden occlusion of any artery is generally very painful.

### CASE 1.

A man aged 65 years was referred to me because of nocturnal dyspnea, high blood pressure, and loss of his usual vigor. In a few days his heart began to fibrillate, and this was followed by severe

abdominal pain, colicky in nature, and of indefinite localization. There was marked obstipation and no passage of gas for two days.

Finally four ounces of castor oil caused bowel movements. However, the violent pains continued, and became localized over the left kidney and ureter, and percussion over the kidney was painful. The pains grew worse and the patient rolled in agony. The abdomen became distended, rigid, and tender everywhere. The bowel movements now contained mucus and considerable blood. As there was doubt about the diagnosis, it was decided to explore the abdomen. Just before making his incision, the surgeon remarked: "I feel that we are going to find a ruptured appendix." My own diagnosis had shifted from stone in the kidney to mesenteric thrombosis. As soon as the incision was made, black gangrenous bowel protruded. Mesenteric thrombosis was found at autopsy.

This case brings out two points: (1) The mesenteric arteries are highly sensitive when suddenly occluded; and (2) the pain and other symptoms closely simulate common surgical conditions. The persistent obstipation was probably due to reflex ileus. The presence of auricular fibrillation suggests the possibility of embolism from a clot in the left auricular appendage.

### CASE 2.

A physician aged 50 years suffered from high blood pressure, and angina of effort for 10 years. January 28, 1928, he had a typical attack of cardiac infarct. March 27, there was a second infarction followed by several small hemoptyses.

A few days later there was severe pain in the left hypochondrium, which radiated downward and suggested stone in the kidney or renal infarct. There was no blood in the urine. There was also pain in the region of the spleen, which was thought to be possibly due to lung infarct. The abdominal pain became general, the abdomen tightly distended and tender everywhere. There was complete obstipation. No gas was passed for four days, in spite of the most skillful treatment. Finally, fecal matter returned with enemas and peristalsis was reestablished. There was no blood or mucus in the passages. April 8, 1928, he suffered a sudden complete right-sided paralysis with aphasia, all of which persisted until his death, April 20, 1929.

At post-mortem the heart showed infarct of the left ventricle and both coronaries were markedly sclerosed. The thoracic aorta was only moderately atheromatous, but the abdominal aorta was markedly atheromatous, with many large calcified patches, and all of its branches were thick-walled and tortuous. The spleen was small and scarred by old infarcts and the left kidney had a scar extending its whole length, greatly damaging the cortex. There was no pathology in the gallbladder or the digestive tract.

In this case we have marked vascular pathology in the abdomen, extensive arteriosclerosis, and splenic and kidney infarction. These findings, I think, readily account for all of the abdominal symptoms presented. The spleen and kidney are quite plentifully supplied with sensory nerves going direct to the cord, and not differing in any way anatomically from the cerebrospinal sensory nerves.

This is true of all afferent nerves from the abdominal viscera and the blood vessels ev-

everywhere. Afferent impulses, from what was probably embolism in the splenic and renal arteries, caused the intestinal ileus, and, by exciting vascular spasm, caused the abdominal pain.

The question of surgical intervention might have been considered in this case. So far, in our autopsies on cases of cardiac infarct, we have found no acute surgical pathology in the abdomen. We have found a quiescent gallbladder with stone, a number of times.

In about one-fourth of all cases of coronary sclerosis, there is sclerosis of the abdominal arteries. In cases of arterial hypertension, the arterioles are sclerosed in the pancreas in forty-nine per cent, in the liver in thirty per cent, in the spleen in sixty-six per cent, and in the kidney in over ninety per cent.

#### CASE 3

An American, aged 40 years was seen in December 1928, during an attack of influenza from which he died. Some 15 years before, he suffered a very acute attack of abdominal pain, during which he rolled on the floor in agony. A surgeon who saw him thought that he had appendicitis and wanted to operate. This was refused. He gradually got better, but continued to suffer quite constantly with gas in the stomach and pain that came on from a few minutes to two hours after eating, sometimes going to his left shoulder and arm. At these times moving his arm made the pain worse. His gastric suffering was so severe and prolonged that it was believed that he had ulcer of the stomach or some other grave digestive ailment. For this reason a post mortem was requested by the family.

At postmortem the entire digestive tract was carefully examined, and no lesion found: no ulcer, no appendicitis, no diseased gallbladder. The left ventricle of the heart was much enlarged and there was marked aneurysmal dilation of the apex. Over this area, the heart wall was very thin and composed mostly of scar tissue. The anterior descending branch of the left coronary was sclerosed and completely obstructed. The aorta was markedly sclerotic in both its thoracic and abdominal portions, and the orifices of the celiac and mesenteric arteries narrowed by atheroma.

Were his abdominal symptoms due to syphilis? I think not. Dr. W. W. Waite could find no evidence of syphilis in the aorta. (It should have been mentioned that there had been a faintly positive Wassermann reaction). The coronary arteries were atheromatous and not scarred at the orifice as we find in the coronary obstruction of syphilis. In the absence of confirming signs, a doubtful Wassermann is of little significance. We have had several cases of early coronary sclerosis. We are led to very strongly suspect that what was considered an attack of acute appendicitis was really acute coronary obstruction and that the subsequent abdominal symptoms were due to arteriosclerosis and circulatory disturbances in the abdomen. When heart symptoms are present in such a case, it is common to at-

tribute the disturbance to indigestion or gas in the stomach. In the presence of general arteriosclerosis, this is, more often than not, a case of putting the cart before the horse.

On the morning of May 19, 1923, Mr. A. C., aged 65, seemed quite well. After breakfast, he started to cross the street but returned at once because of violent pain in the stomach, that went up into his chest, and he felt that he must die. He coughed violently and began to vomit blood, containing quite large clots. His physician thought he must have cancer or ulcer of the stomach. The pain continued for two days, and was followed by symptoms of heart failure.

In 1902 he was thought to have stone in the kidney and operation was contemplated; but the pain shifted to the other side and the diagnosis was in doubt. During 1923, he had pain in his legs, especially at night, which was relieved by heat. His blood pressure in recent years was high. After his first attack in May, 1923, his stomach continued to give him a great deal of trouble, but a complete examination by a competent gastro-enterologist disclosed no cause for his troubles in the digestive tract.

When he came under my care in August 1923, he was edematous, with tender, swollen liver, dyspnea, cyanosis, and nocturnal asthma. The heart was enlarged and there was a systolic murmur at the apex. He made a partial recovery, but continued to suffer with digestive symptoms and anginal pains on effort. He died January 26, 1928, from gradual heart failure. I had made a diagnosis of cardiac infarct in 1923. Postmortem showed cirrhosis of the liver. The stomach showed a thickened, congested, red mucosa. There were no ulcers nor diseased gallbladder. The kidneys were in fair condition. Both coronaries were markedly sclerosed. The anterior descending branch of the left coronary was obliterated by an old thrombus, but a fairly good collateral circulation had been established. The left apex was very thin and made up of scar tissue.

Was the gastric hemorrhage due to cirrhosis of the liver? This is not probable because, during the subsequent five years of his life, there should have been more hemorrhages. Gastric ulcer is excluded by examination and by postmortem. Fifteen per cent of gastric ulcers in those past middle life are said to be due to arteriosclerosis. With a thrombosed coronary, we may believe that there was also thrombosis in some small gastric artery, causing necrosis and erosion, which was the source of the bleeding and hematemesis. We have had two other cases of gastric hemorrhage associated with cardiac infarct. The postmortem confirms the opinion that in this case the digestive symptoms were of cardio-vascular origin. The vague pains ascribed to the kidney may also have been due to arteriosclerosis.

#### CASE 5

A highly intelligent surgeon 55 years of age had suffered for many years with high blood pressure, indigestion, gas on the stomach and what he believed to be attacks of gallstone colic. On Christmas day, 1924, he ate heavily and that night had sudden dyspnea, vomiting, violent pain in the epigastrium, going up under the sternum and to both shoulders. He attributed his trouble to indigestion and rheu-



matism, and refused to go to bed. He died suddenly, January 25, 1925.

Autopsy revealed thrombotic occlusion of the descending branch of the left coronary artery, aneurysm of the apex and rupture of the interventricular septum. The gallbladder was normal and no pathology was found in the digestive tract.

A so-called gastric or gallbladder pain that is accompanied by pain in the left shoulder and arm often means coronary sclerosis, though abdominal lesions may be present at the same time. Pain due to arterial spasm is sometimes so similar to the pain of gallstone colic or duodenal ulcer as to be very difficult to differentiate. In fact, the pain of ulcer in the digestive tract is thought by some to be due to chemical irritation of blood vessels lying in the submucosa. In hemorrhagic pancreatitis, which sometimes comes into question in the abdominal symptoms of cardiac infarct, there is really a vascular lesion. Many of the sensory nerves of the pancreas go to the pancreatic arteries and, with arteriosclerosis in that area, an irritable focus could well give rise to the syndrome of pancreatitis, even without hemorrhage. However, a good deal of confusion is due to poor observation, for, when patients are asked to point out the location of their stomach pain, they often put their hands on the upper sternum.

#### CASE 6

A young lady of 22 years was seen Feb. 26, 1926. She had been sent to a surgeon for operation for gastric ulcer, but x-ray showed an enlarged heart and she was sent to me.

During 1924 she had had severe attacks with vomiting and pain in the stomach and hepatic areas. At that time gallstone colic had been diagnosed. At times she became bedfast. Exercise became difficult on account of dyspnea.

While under my observation, she continued to suffer with pain in the stomach and vomiting, and at times with pain in the shoulders and arms. The pulse was feeble and slow, but the blood pressure was high. The liver was swollen and very tender. The heart was very large. No murmurs were present. She finally developed general edema and died suddenly, April 15, 1926. My antemortem diagnosis was congenital heart disease.

At postmortem the heart was found very much dilated, especially the left ventricle, which was thin and diffusely fibrosed. The aorta and its branches were thin, delicate and very narrow. The gallbladder was normal and no ulcers were found in the stomach or duodenum. The mucosa of the stomach was congested, thickened, and marked with punctate hemorrhages. The postmortem diagnosis was congenital vascular hypoplasia.

Quite evidently this case was cardiovascular from the beginning. Why should there have been such definite syndromes of gallstone colic and gastric ulcer?

The pain was made worse by food. I think the pain is explained by the increased work thrown upon the thin and narrow abdominal arteries in the attempt to furnish an adequate blood supply for digestion. The same

difficulties were encountered in the coronaries, resulting in pain in the shoulders and arms. The fact that over-distention, as well as over-contraction, of a blood vessel will give rise to pain has already been mentioned.

In this case we have marked congenital vascular inferiority. Lesser defects might well cause similar symptoms.

It is said that fifteen per cent of all gastric and duodenal ulcers in the young are caused by local vascular spasm, perhaps similar to that of Raynaud's disease in the extremities. Localized vascular spasm in the splanchnic area may account for necrosis and hemorrhage and for many obscure abdominal pains.

Pain about the heart, upper chest, and in the arms is readily conceded to be due in many cases to sclerotic coronaries. We are not so quick to see that sclerotic arteries in the belly may cause even more widespread symptoms. The mechanism is just the same. Intermittent claudication in the leg offers a visible demonstration of what happens. Irritation in the sclerotic area of the artery by exercise, originates afferent sensory impulses to the nerve centers and excites sympathetic motor reflexes to the vessels lower down, causing spasticity and pain. The *dorsalis pedis* pulse disappears and there is blueness and coldness of the foot. In angina pectoris, strain on the sclerotic portion of the coronary artery, from exercise, over-eating, emotion, toxemia or infection, excites reflexes in the same way, with resulting spasm and pain in the non-diseased portion of the artery.

The same stimulus may result in vascular spasm and pain in the arm, because the arteries of the arm get their sympathetic nerve supply from the same cord area as the coronaries. In the belly, the same mechanism comes into play through sclerotic or other irritation in the celiac or mesenteric arteries, exciting visceromotor reflexes by way of the splanchnic nerves. On account of the multiple contents of the belly, such reflexes have a widespread effect, as seen in the cases just discussed. The blood vessels go to every tissue in the abdomen and carry on their walls not only their own nerve supply but that to every organ in the abdomen. Aneurysm of the hepatic artery has been mistaken for gallstones. Hence, it is quite evident that afferent impulses from the vascular tissues in the belly may have much the same effect in causing symptoms as those from the other abdominal contents. A look at the heart and blood vessels, in cases with obscure abdominal symptoms, may avert serious mistakes.

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## CORONARY CONCLUSIONS

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(Read before the Medical and Surgical Association of the Southwest, at the fifteenth annual session, held at Phoenix, Ariz., Nov. 7 to 9, 1929.)

Early in December of last year, a prominent physician of Yavapai County was found dead in bed. He had apparently died without a struggle, for his bed was quite undisturbed. He had always enjoyed excellent health and was noted for his unusual physique. Ten days prior to his death, while driving his car, he was suddenly stricken with a agonizing pain over the precordia. The pain was so severe that he was forced to stop his car for a few minutes before he was able to start for home, where, upon his arrival, he was assisted from his car and a fellow physician summoned. He was nervous and restless and appeared to be in severe shock. His color was ashy, his skin cold and clammy. The pulse was feeble and the heart sounds unusually faint. He complained of a severe pain of extraordinary intensity over the precordia. Large doses of morphine were necessary before relief was obtained. Twenty-four hours later a friction rub was heard over the left chest in the region of the heart. The patient was feeling much better although a moderate amount of pain and distress remained.

At the end of a week he was somewhat improved, although he complained that he felt poorly and could not gain back his lost strength. He was out of bed and walking about the house, but was extraordinarily weak for a man of his unusual physique. The night before his death, he was feeling moderately well and was in good spirits. He retired in apparently good health at eleven o'clock and was found dead at six the following morning. A diagnosis of coronary thrombosis was made.

Since that time, four other fatal cases of coronary thrombosis have occurred in Prescott. I have personal knowledge of two of these cases. The other two were reported to me by my colleague, Dr. James H. Allen of Prescott, to whom I am indebted for permission to report them.

In this series of five cases the age of the patient varied from 43 years to 70 years with an average of 55.5 years. With one exception, all patients gave a history of previous attacks of precordial pain varying from a slight sense of discomfort, diagnosed by the patient as "intercostal neuralgia," to severe pain requiring large doses of morphine for relief. In no case was there demonstrable relation between exertion and onset of the attack. The duration of the fatal attack varied from thirty minutes to ten days. In one case, only, was there a friction rub heard.

Although the condition of thrombosis and occlusion of the coronary arteries has been known to pathologists for a long time, it has been only in recent years that clinicians have come to recognize it as a direct clinical entity which is, as Herrick says, "almost as distinct and clear-cut as a cerebral hemorrhage." It is by no means rare, and is probably the chief cause of sudden death in presumably healthy individuals.

## PATHOLOGY

The cause of these thromboses seems fairly well established. Postmortem examinations, almost without exception, show chronic changes in the walls of the coronaries, usually in the anterior descending branch of the left coronary. These changes are described as patchy atheromatosis, calcareous plaques, narrowing at the point of bifurcation, arteriosclerosis.

As a result of narrowing of the lumen, injury to the intima and sluggish blood flow, thrombus formation occurs. Gradual occlusion of a coronary may produce only a few symptoms, as collateral circulation may care for the affected area. Sudden occlusion of a large artery, however, usually produces sudden death, presumably through ventricular fibrillation. If death does not immediately ensue, infarction and anemic necrosis follow. If the softened area does not rupture within the next few days, recovery may occur, with either an aneurysmal bulging or plaques of fibrosis.

By far the great majority of cases occur in males between fifty and sixty. Many cases show chronic hypertension. Occupation, alcohol and tobacco are not determining factors. White has shown that syphilis plays a very minor role in the etiology of this con-



dition. Peripheral arteriosclerosis may or may not be present.

#### CLASSIFICATION

Not all cases of coronary thrombosis die suddenly. Some live for many months. Many cases are seen in which the symptoms are extremely mild. Herrick has grouped cases of coronary thrombosis according to clinical symptoms in the following manner:

"1. Cases of instantaneous death, a group graphically described by Krehl, in which there is no death struggle, the heart beat and breathing stopping at once.

"2. Cases of death within a few minutes or a few hours after the obstruction. These are the cases that are found dead, or clearly in the death agony, by the physician who is hastily summoned.

"3. Cases of severity in which, however, death is delayed for several hours, days or months, or recovery occurs.

"4. A group that may be assumed to exist, embracing cases with mild symptoms, for example, a slight precordial pain ordinarily not recognized, due to obstruction in the smallest branches of the arteries."

#### SYMPTOMATOLOGY

The commonest symptom is pain, usually coming on suddenly. Hammen has tabulated the symptoms in the following fashion:

1. The immediate symptoms associated with the occlusion; the original seizure.
  - A. Pain.
  - B. Shock.
    1. Prostration.
    2. Fall in blood pressure.
    3. Suppression of urine.
2. The symptoms associated with the myocardial damage, myocardial insufficiency.
  - A. Dyspnea.
  - B. Passive congestion.
    1. Cyanosis.
    2. Pulmonary edema.
    3. Enlarged liver.
    4. Albuminuria.
    5. Subcutaneous edema.
  - C. Cheyne-Stokes breathing.
  - D. Feeble cardiac impulse, faint heart sounds, gallop rhythm, murmurs, cardiac arrhythmias.
3. The symptoms associated with myocardial infarct.
  - A. Fever and leukocytosis.
  - B. Pericarditis.
  - C. Embolic phenomena.
  - D. Cardiac aneurysm and rupture.

4. Additional symptoms.

- A. Nausea and vomiting.
- B. Facies.
- C. Vasomotor symptoms.
- D. Nervous symptoms.

The electrocardiograph usually shows characteristic changes following coronary occlusion whether occurring spontaneously in man or produced artificially in experimental animals. There is an inversion of the T wave in leads I and II and a decrease in the amplitude of the QRS complex accompanied in many instances by notching, slurring or spreading of the latter. However, cases occur without the characteristic electrocardiographic changes, and as Warfield points out, the electrocardiographic evidence is valuable only when it is positive.

TYPICAL CASE: Patient number five may be cited as a typical case. A professional man, aged 43, of unusually regular habits, had complained of a series of minor, to moderately severe, pains in the precordial area for three or four months. Otherwise he was an unusually healthy and robust individual and had enjoyed good health for as long as he could remember. While doing light chores about the house, he was seized quite suddenly with a sharp agonizing pain over the lower sternum. The pain was infinitely more severe than any he had previously experienced. He was extremely restless and could not be quieted, but rolled about the bed complaining that the distress was so severe that he could not remain still. His face was ashen, his lips cyanotic, his skin cold and very wet. His pulse was almost imperceptible, thready, regular, rapid. He was nauseated, vomited. One-half grain of morphine was given over a period of an hour before partial relief was obtained. He then became somewhat quiet, but from time to time would toss himself nervously about the bed. The most striking feature of the case was the patient's ability to move about the bed when his heart sounds were scarcely audible, his pulse almost imperceptible and his systolic blood pressure only 60 mm. Hg. He appeared on the point of dissolution, but remained remarkably clear mentally and talked with the attending physicians. Within three hours, typical Cheyne-Stokes breathing developed, and the patient died five hours after the onset of the attack. The three attending physicians independently arrived at the same diagnosis.

#### DIFFERENTIAL DIAGNOSIS

In considering the differential diagnosis of coronary occlusion, one should think first of angina pectoris. How often death in angina pectoris is due to coronary obstruction is extremely hard to tell. Certainly more and more cases of angina pectoris are showing coronary obstruction at autopsy. However, true angina pectoris usually presents a picture differing in certain essential details from coronary occlusion. In angina, the attack is more apt to be induced by exertion, and is usually of short duration. The patient is apprehensive and is afraid to move, while in occlusion the patient is extremely restless and refuses to remain quiet. The angina

pain responds readily to nitrites and soon passes off. In occlusion, the pain is of unusual intensity, requiring large doses of morphine for relief. In this connection one should remember that many patients with a history of angina for some time finally succumb to an attack of occlusion.

In both mitral stenosis and syphilitic aortitis, severe paroxysms of pain are said to occur, but they are rarely confused with coronary obstruction. Although not ordinarily given as a differential point, one should bear in mind that cerebral hemorrhage is sometimes confused with coronary attacks. The onset of the attack, the absence of characteristic pain, the gradual development of coma, the characteristic neurological findings and the extreme rarity of death within several hours, should tend to differentiate these conditions.

The remarkable resemblance of some cases of coronary occlusion to surgical accidents should not be forgotten. The sudden onset of epigastric pain, nausea, vomiting and occasionally board-like rigidity of the abdomen, with signs of collapse, suggest acute gallbladder disease, perforation of a peptic ulcer, pancreatitis. Examination of the heart may give little information. A history of previous attacks of shortness of breath is very suggestive. The presence of rales at the bases offers the chief differential point, as evidence of congestive failure is practically always present in an attack of occlusion of any severity. Levine saw a case operated upon for gallstones which showed coronary thrombosis at autopsy. Herrick, on the other hand, saw a case, operated upon for gallstones, showing coronary thrombosis as well as gallbladder pathology, on post mortem examination.

#### PROGNOSIS

It is extremely difficult to give the prognosis for the acute attack. Certainly, if the patient survive the first few days, especially if the temperature and white count return to normal, if the signs of congestive failure are lessened, if the heart sounds are of better quality and if there is a gradual improvement in the blood pressure level, the outlook is hopeful. On the other hand, many patients who seem to be making satisfactory progress die quite suddenly while still at rest.

The general prognosis is somewhat more encouraging. In White's series of sixty-two patients, thirty are alive and have been living for periods varying from three months to ten years. Seventeen of them have lived for more than a year. The average duration of life in those living is twenty-four and one-half months. In analyzing his series, White

came to the conclusion that "the sex and age at which the attack occurs seems to make little or no difference as far as prognosis is concerned. Hypertension, evident sclerosis and syphilis alter the prognosis hardly at all. Poor heart sounds and congestive failure add to the gravity of the prognosis. . . Neither the previous occurrence of angina pectoris nor its duration prior to the attack of coronary thrombosis has seemed to matter."

The general immediate mortality, according to Levine, was fifty-three per cent. "One might fairly consider that a patient has an even chance to survive an attack of coronary thrombosis." In Levine's series of 143 cases, the average duration of life was twenty-four months, which coincides exactly with White's observations. Levine predicts that the average length of life in his series will probably be three years, with extreme variations of from a few months to ten or more years.

#### TREATMENT

By far the most useful drug in the treatment of coronary occlusion is morphine. It should be given in large doses to control the severe pain. One-half a grain hypodermically, repeated within an hour, is sometimes required. Most authorities agree that digitalis should be started soon after the attack. It should be given in massive doses so that the patient receives the equivalent of one and one-half grains of the powdered leaf per ten pounds of body weight within twenty-four hours. Nitroglycerine is probably contraindicated. Caffein is useful, especially if Cheyne-Stokes respiration is present. Levine has used quinidine with life-saving results in cases with ventricular tachycardia.

The subsequent treatment is even more important than that of the attack itself. The lives of quite a number of these patients can be prolonged for weeks and even months by prolonged intensive care following the acute attack. The patient should be kept absolutely flat in bed for a period varying from six weeks to six months. The value of prolonged rest cannot be over-emphasized and one month needlessly spent in bed will do no great harm to any patient with coronary thrombosis.

In every case of sudden, severe, precordial or upper abdominal pain the possibility of coronary occlusion should not be overlooked. As Herrick says, "If the possibility of this accident is thought of . . . the newspapers will have fewer reports of prominent men prostrated or succumbing to 'acute indigestion' or 'ptomaine poisoning.' Warfield reminds us that "coronary thrombosis is the



one primary cause of sudden dramatic death in an apparently healthy individual."

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### MYOCARDIAL INSUFFICIENCY DIAGNOSIS AND SUGGESTIONS OF TREATMENT

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Published statistics, which are supported by prevailing opinion, indicate that there has been a marked increase in both the incidence and death rate in heart diseases during the past twenty-five or thirty years. However, this increase may not be so great as statistics would lead us to believe. There are a number of factors which contribute to this apparent increase: (1) The improved methods of diagnosis, making possible the enumeration of a larger percentage of diseased hearts.<sup>1</sup> (2) The increase in the span of life, resulting largely from the decrease in death rate among children, thus permitting a larger percentage of individuals to reach the "heart age."<sup>2</sup> (3) Actual increase in heart disease.

"The heart is the body's engine—the most vital and important motor in the world—yet the only one whose requirements and age defects are neglected until cessation of function is not only foreshadowed but threatened or actually at hand."<sup>3</sup> Physiologically the heart is a perfect machine, a complete power unit within itself, with property of independent function, if necessary. The muscle possesses certain inherent qualities which are essential to normal functioning of the organ. These are: contractility, irritability, conductivity, rhythmicity, and tonicity. Disturbance with any of these qualities means an abnormal heart function and, if this disturbance continues for any great length of time, may result in serious disability and eventually in death of the individual. In addition to these specialized muscular qualities, there exists a special con-

duction system, composed of the sino-auricular node, the auricular-ventricular node, the bundle of His with its two main divisions, right and left branches which divide into ramifications leading to Purkinje's fibers and finally to muscle cells. Under normal conditions, impulses originating in the sino-auricular node are sent out at regular intervals. These impulses cause contraction of the auricles, which is followed by contraction of ventricles in regular sequence. By this action the blood is forced through the body, supplying all the tissue. The heart<sup>4</sup> beating at the rate of fifty to seventy-eight per minute, with the individual observing usual eight hour rest and performing ordinary labor, occupies approximately one-third of time in action (systole) and two-thirds of time at rest (diastole). Physical exertion, infectious conditions, toxemias, emotional disturbances, toxic agents of various types, and other conditions, influence the heart rate. When the rate increases, it does so at the expense of diastole, thus reducing the rest period. In attempting to protect damaged hearts against definite failure, one of the prime objects should be to reduce "time in action," by so doing, increase the resting period.

From an etiological standpoint,<sup>4</sup> diseases of the heart are classified as follows: (1) Etiology unknown. Under this class, I venture to place a group of myocardial conditions which are manifested principally by subjective symptoms. The symptomatology may or may not be supported by physical signs or electrocardiographic records indicating a myocardial deficiency or even a low reserve. (2) Rheumatic heart disease, active or inactive. This group includes these lesions resulting from acute rheumatic fever, polyarthritis, chorea, growing pains, tonsillitis, pharyngitis, purpura, and other infections of this nature. Dr. Paul White<sup>1</sup> of Boston and Douchette Jones of University of Virginia, in a study of three thousand cases of heart disease in New England, found that rheumatic cases comprised 74.4 per cent of all cases under forty years of age and 27.9 per cent of the entire series. (3) Syphilis possibly accounts for two per cent to three per cent of all cases. (4) Bacterial infections—the subacute bacterial endocarditis, most commonly caused by streptococcus viridans. Some of the chronic endocardial lesions may also be placed under this classification. (5) Thyroid—either hyper or hypothyroid state. (6) Toxic—bacterial, mineral and vegetable. (7) Neurosis—a diagnosis which should be used with care and only after a most thorough search fails to find any other factor

which may account for the symptomatology. Like neurasthenia, it is often a screen shielding ignorance. (8) General systemic disease—such as arterio-sclerosis, chronic nephritis, diabetes, emphysema, hypertension, anemia, and so forth. In this group, probably, should be placed those myocardial weaknesses and disturbances resulting from, or in association with, tuberculous infections, bronchial asthma, pulmonary emphysema, and so forth. (9) Traumatic causes—injuries resulting in wide distribution of scar tissue, causing a narrowing of the lumen of the arteries which interferes with the venous return. A case of this type was recently seen at this hospital. The injury, a shrapnel wound right side of the body, had left extensive scar tissue in the right thorax, right arm and right leg. There occurred partial obstruction of right subclavian artery. A diagnosis was made of aneurysm subclavian, due primarily to the obstruction. The heart in this case showed considerable enlargement and other symptoms of increased activity. (10) Congenital development defect. Myocardial disease, coronary lesions, or long continued overloading of the heart resulting from, or in association with, any of the above conditions, in all probability, will eventually result in myocardial insufficiency terminating in dilatation, general edema, and death.

Tradition and habit have led us to think of heart disease in terms of valvular lesions, manifested by usual terminal symptoms. We have been thinking in terms of anatomical changes rather than of functional changes. MacKenzie defines heart failure as a condition in which the heart is unable to maintain efficient circulation during the effort necessary for daily life of the individual. Such condition may be present in the absence of any signs of cardiac enlargement, so far as our present conception goes of normal heart size, with no abnormal heart sounds, and possibly, a negative electrocardiogram. In some of these cases we must rely upon history and subjective symptoms for diagnosis. Care should be observed at all times in order that we may avoid mistakes, especially those that will make invalids of our patients. However, a diagnosis of myocardial insufficiency, followed by a period of watchful waiting for final confirmation, is much safer for the patient than to disregard the symptoms and pass the case up as one of neurosis, later to find that we have a permanently injured heart, which might have been prevented by proper treatment. "Early diagnosis of heart failure and competent conception of myocardial reserve, its peculiarities and therapeutic possibilities are the

problems with which we should be concerned in every cardiac patient."

Dr. Lyman Green<sup>2</sup> says that "tonus deficiency is the chief basic source of heart symptoms, subjective and objective, aside from murmurs of endocardial and pericardial lesions. That tonus deficiencies and even the most urgent symptoms of heart failure may arise in absence of any readily demonstrable gross change in heart outline." The conditions affecting tonicity are: (1) Circulating toxins, as in acute and chronic infectious diseases, chronic nephritis, hidden foci of infection, acidosis or the ingestion of certain poisons, organic or inorganic. (2) States of profound anemia. (3) Other conditions associated with decided nutritional disturbances, especially in the viscerotropic group. (4) Degenerative and inflammatory disease of the heart muscle. (5) Impairment of the intrinsic circulation of the heart. (6) Myocardial overstrain, isolated, continuous or intermittent, in the presence of any of the factors elsewhere stated. (7) Emotional crisis. (8) In weakened or unstable hearts, excessive heat or this combined with vitiated air, hot baths or prolonged sweating. (9) Unduly long confinement in bed. (10) Surgical shock. (11) Overdose of digitalis.

A chronic pulmonary tuberculosis, while not specifically mentioned as a factor by any authors referred to in this article, is, we believe, a frequent cause of impaired myocardial tonicity. It appears reasonable to us that that absorption of toxins over a long period of time, associated with a period of inactivity and marked nutritional disturbance, provides an excellent opportunity for development of myocardial insufficiency. Our study of heart function of patients affected with pulmonary tuberculosis, by electrocardiographic study and other means, tends to substantiate such hypothesis. We believe that, prior to the administration of artificial pneumothorax, surgical collapse, or any other procedure which will tend to limit the breathing space of a tuberculous patient, a more thorough study of his heart function should be made. Such a study is also important before prescribing exercise for an advanced tuberculosis patient who has been physically inactive for a long period of time.

The diagnosis and evaluation of myocardial insufficiency, regardless of the cause, requires a complete study of the patient, including examination of lungs, pathology either active or fibrotic, gastro-intestinal function, circulatory disturbance in the extremities, study of the reflex nervous system, a laboratory study of urine, blood chemistry, basal metabolism, vital capacity, and



so forth. This examination may reveal evidence of dysfunction of other vital organs which was previously thought to be due to heart dysfunction. Likewise, the finding of slight disturbance in blood chemistry, laboratory findings of albumin, possibly some casts in urine, should not distract attention from the heart. Such conditions are often a result of passive congestion, due to disturbance in circulation.

The early recognition of any type of heart disease is important, because it is apparent that it is in the early stage that we are able to institute the most effective treatment procedures. There is a tendency among medical men to fear facing the truth, even when cardiac dysfunction is recognized. They justify themselves by saying that we are likely to make neurotics of our patients by calling attention to a weakened cardiac function. We face the same type of argument in the fight for early diagnosis and treatment of pulmonary tuberculosis. The family physician, in many instances, insists on telling the patient that he has suffered a "nervous breakdown," has a "slight bronchitis," or gives some other simple excuse for the symptoms. This mistaken diagnosis, when finally recognized by the patient, causes him to lose confidence in the family physician. The result of an attitude of this kind on the part of the medical profession, can do only harm. The truth, if completely told, about any heart condition, as well as other chronic diseases in their early stages, should improve the mental attitude rather than produce a depressing effect.

The proper diagnosis will include the cause and whether active or inactive, extent of involvement in rhythm and in heart function; also, whether there is impairment of function in other organs which may embarrass the heart or produce symptoms which affect it indirectly.

The fully compensated heart, whether due to endocardial, pericardial or myocardial lesions, should produce no subjective symptoms and show no physical signs suggestive of failure. The normal heart possesses an unusually large reserve power, thirteen-fold, and is, therefore, capable of performing normal function in spite of certain anatomical abnormalities. When an abnormal condition is recognized, it becomes the duty of the physician to determine, as far as possible, the functioning capacity of the heart, in order that he may be properly prepared to advise his patient as to habits, physical activity, and so forth. The stethoscope, although an aid in diagnosis, may prove a detriment in examination of the heart, unless we rec-

ognize the fact that heart murmurs do not necessarily mean endocardial lesion, and, when they are the result of such condition, the patient may still live a normal, useful life without even limitations of activity. May we always think and act in terms of cardiac function with due regard for the welfare of our patient.

Dyspnea, fatigueability, digestive disturbance, pain, palpitation, cough, disturbed sleep and vertigo, are the most common subjective symptoms presented in myocardial insufficiency. Each symptom must be considered in detail, as it may be caused by some other disease. Dyspnea, shortness of breath, on exertion, is probably the most common symptom of the group. It may not be predominant; its presence and severity depend largely upon the activity of the patient. It is due to interference with normal exchange of gases in the lungs and is absent when the heart is fully compensated, not present in valvular disease unless decompensation results. Severe dyspnea, especially when associated with cough and wheezing sounds in lungs, is often diagnosed as bronchial asthma. Differential diagnosis is, in many cases, difficult and can be made only by the most careful and painstaking examination. Fatigueability, a common complaint with many abnormal states, when associated with other subjective symptoms, should always lead us to think of heart disease as a possible cause. Digestive disturbance is a still more common symptom, yet one that should direct our minds to the heart. Beware of the epigastric pain and the complaint of "gas" on the stomach, not relieved by belching. The sense of discomfort following a hearty meal will often yield to digitalis and body rest. Pain associated with heart disease may vary from a mere heart consciousness, a sense of heaviness in the precordial region, to the vice-like griping pain of coronary thrombosis. It is not an uncommon symptom with the tired heart as well as with the more advanced degree of insufficiency. Palpitation may mean anything from a "heart consciousness" to auricular fibrillation or paroxysmal tachycardia. A rapid, pounding heart following slight exertion, unaccounted for by infectious diseases or emotional state, is significant and should be carefully considered in connection with the study of myocardial disease. Cough, especially in the elderly patient, is always suggestive of heart weakness and may frequently be relieved by digitalis. Disturbance in sleep, bad dreams, early morning wakening, are not uncommon symptoms of heart disease, especially when the individual is under nervous tension or too

great physical exertion. Vertigo, although a common symptom of other disturbances, is not an unusual complaint with the cardiopath.

Objective symptoms such as cyanosis, edema, enlarged, tender liver, diffuse apex beat, faint heart sounds, variations in blood pressure, rales at base of lungs, are variable findings, depending upon the degree of decompensation present. The blood pressure may be increased, normal or low. A low pulse pressure, in absence of mitral stenosis, is significant. Cyanosis, although common in decompensation, may be caused by exposure to cold, pulmonary infection, and so forth. The slightly enlarged, tender liver is always suggestive.

The x-ray and fluoroscope are valuable aids in diagnosis of myocardial conditions. The custom of determining all heart dimensions by location of the P.M.I. or by percussion, is unreliable. The shape of the thorax, the thickness of the walls, the variation of size and position of normal hearts, make it impossible by these methods to determine with any degree of accuracy whether enlargement has taken place or not. The teleoroentgenogram taken at two meter distance at end of inspiration is probably the most reliable method yet employed for measuring the diameter of the heart. The fluoroscope gives information relative to dilatation of aorta, size of heart chambers, disturbance in tonicity, and other information which cannot be determined by the x-ray picture. Many clinicians rely upon the fluoroscope almost exclusively, utilizing the orthodiagram as a means of recording heart dimensions and as a permanent record.

In interpreting the teleoroentgenogram<sup>2</sup>, the determination of the ratio of the diameter of the heart to the internal chest diameter at the end of inspiration is of importance. Dr. Greene states that a ratio of above forty per cent in the sthenic individual, and above thirty-three or thirty-four per cent in the asthenic, is fairly good evidence that we are dealing with an enlarged heart.

"The electrocardiogram gives the best information concerning the ventricular muscle obtainable: however, a nominal amount of disturbance may exist without change in the record."<sup>5</sup> A cardiac muscle that is below par because of fatigue or failing circulation, will show a changed electrical production and conduction, which will be manifested by abnormal deflections on the cardiogram. A notched P, a widening of Q.R.S. complex, with or without notching, a slurring of the R, a low T wave, are some of the abnormalities noted.

Confronted with the fatigued heart, with its evidence of diminished reserve, or the more advanced type, with its moderate or severe manifestations of insufficiency, our problem is very much the same. We have much to learn about the management of myocardial insufficiency but our course, so far as making an effort to diminish the load on the heart and support the muscular effort, seems evident. We cannot hope to repair a diseased muscle or replace a defective valve, but we can do much toward improving function, provided the heart is not too badly damaged. Restoration of impaired reserve may require only well-directed advice, outlining a course of action which will reduce the physical strain. If there be evidence of infective foci or other sources of toxemia, they should be removed. This may mean the removal of tonsils, extirpation of a gallbladder or thyroid gland, extraction of infected teeth, treatment of pulmonary infection, treatment of diabetes, nephritis and so forth, or probably the study of the colon and elimination of toxic products from this source. Our effort to reduce the demands are especially important when the effect of weakened circulation is shown by secondary renal changes and edema. A low protein, decrease or elimination of salt, decrease of fluid intake, are all factors which will tend to diminish the work of the heart and especially the kidneys.

Decreased physical activity for the patient, with minimal impairment of reserve, increased periods of rest, or, in severe cases, absolute rest followed by a gradual resumption of physical activity, is the most important and effective part of the treatment procedure. Body rest is nature's method for improving muscle tone, and for restoration of myocardial reserve. This remedy, like others, should not be prescribed in too large doses. It is extremely important that we guard against making an invalid of our patient. Rest maintained for too long a period may result in loss of skeletal muscle power, as well as further loss of cardiac power. Rest, therefore, should be as carefully prescribed and resumption of exercise as closely guarded, as is any other part of the prescription. Diet is also an important feature in the treatment program. There are two factors to be considered in prescribing a diet. We desire to limit certain articles of food because in so doing we reduce the work of the kidneys and indirectly the work of the heart; still, the diet must be nutritious, giving ample nourishment to the already crippled myocardium. A simple prescription of low protein, diminished fluid, and low salt is not adequate. We should give attention to the caloric value and



endeavor to supply nourishment which will give the greatest amount of support to the heart with least possible strain on the kidneys.

The utilization of a high carbohydrate diet was probably first advocated by Goustin<sup>9</sup>, 1911. Intravenous injections of glucose, combined with insulin, have been used with considerable success, especially in those hearts badly damaged, where patients' intake by mouth is limited. Dr. Albert S. Hyman of New York and Dr. Maurice Protas of Washington, D. C., have recently outlined a series of diets relatively low in protein and fat and high in carbohydrate, which seem to meet the caloric requirement. We feel that these physicians have made a valuable contribution to our treatment procedure. These diets provide the patient with a nutritious, palatable diet and one that is fairly easily handled by the gastro-intestinal tract.

Digitalis, when properly administered, is a very potent remedy in certain types of heart disease. It is frequently employed in an indiscriminate, empirical fashion; many times, no doubt, to the detriment of the patient. It is not indicated as a therapeutic agent in all abnormal functions of the heart. It has certain very definite indications: namely, congestive heart failure as manifested by dyspnea, cyanosis, edema, alone or in combination, which are obviously the result of decompensation; auricular fibrillation or flutter with the ventricular rate high, and as a therapeutic test. Many clinicians have argued that digitalis has no place in the treatment of congestive heart failure (myocardial insufficiency) with normal rhythm. However, the clinical results obtained with digitalis therapy in these cases, while not so outstanding as in the cases of auricular fibrillation, are attested to by White<sup>8</sup>, Lutem<sup>9</sup>, Fahr<sup>10</sup>, Christian<sup>11</sup>, and many others. Its beneficial effect in this type of myocardial weakness<sup>12</sup> is, no doubt, due to its specific effect of increasing the amplitude of ventricular contraction by its direct action on heart muscle. In extreme cases there occurs a more or less direct effect on the vagus center, causing a prolongation of the auriculo-ventricular conduction time. In auricular fibrillation and flutter, a slowing occurs, partly from stimulation of vagus center, and partly from depressing action on auricular ventricular conduction system. The direct effect on muscle cells, the improvement of muscle tone and contractility, this improving the circulation, is indirectly the cause of the reduction in rate in myocardial insufficiency. This theory is substantiated by the fact that the rate of non-decompensating heart with normal

rhythm is not affected or, if so, only to slight degree.

Digitalis does not restore normal rhythm in fibrillation. In early cases, or possibly those of paroxysmal type, normal rhythm may be re-established under influence of digitalis, but such an effect is probably not due to the action of the remedy but is a mere coincident. It is in these failing hearts, accompanied by disturbed rhythm or greatly increased rate that we see such spectacular results from saturation with digitalis. Maintenance doses must be continued after digitalization is produced, in order to maintain function and a fairly comfortable state.

There are times when we are in doubt as to whether digitalis should be given. In cases with subjective symptoms, especially in elderly persons, or in some cases with heart pains which cannot be accounted for except from myocardial fatigue or beginning failure, we are justified in administering digitalis as a therapeutic test. The action should be carefully watched and the administration stopped as soon as it is determined that untoward symptoms develop or that no benefit is to be derived.

Digitalis therapy is not indicated in compensating hearts except in fibrillation and flutter; in tachycardia due to toxemia; in infectious fevers, such as pneumonia, rheumatic fever, endocarditis or other conditions causing rapid heart action, unless there is a decompensation. It is not indicated in vasomotor collapse such as is frequently encountered in surgical shock. Its use is contraindicated in high-grade heart block accompanied by Adams Stokes' syndrome or in the irritable heart of the so-called "effort syndrome." Hypertensions, premature contractions, hypertrophy, pulsus alternans, are not contra-indications to employment of digitalis, provided there is evidence of decompensation present.

**Administration:** Freshly prepared, standardized tincture and powdered leaves are available and may be obtained from almost any of the leading pharmaceutical houses. Either the tincture or dried leaf is satisfactory. There is apparently no advantage obtained in prescribing the usual proprietary preparations. Increased potency over the standardized tincture and leaves is usually the claim of the distributors of these proprietary preparations. I believe that the majority of our cardiologists agree with me that no advantage may be expected.

When digitalis is therapeutically indicated, it is usually indicated to point of saturation or digitalization unless symptoms develop which are a contraindication. The term sat-

uration or digitalization does not imply toxicity, which will be manifested by anorexia, nausea and vomiting, headache, disturbed vision, mental disturbance. Any one of these symptoms should put us on guard, unless they may be otherwise accounted for. The cardiogram is the surest and safest method of maintaining check on digitalis therapy. The occurrence of paroxysmal tachycardia, delayed P. R. conduction time, heart block, are all conditions which indicate digitalis withdrawal—at least to point of non-toxicity.

After the point of saturation is reached, the problem of maintaining such a state over the desired period of time confronts us. The maintenance dosage varies, depending upon size, age, and general condition of patient. Pardee<sup>5</sup>, in study of action and rate of elimination of this drug, determined that 0.1 to 0.2 gm. is eliminated within the twenty-four hour period. This being the case, the average maintenance dose would be .15 gm. leaf, and 1.5 c.c. of tincture. This dosage is estimated for patient weighing 150 pounds. Children eliminate more rapidly in proportion to weight.

**Dosage:** Eggleston, after study of cat unit method of Hatcher, recommends for quick digitalization, twenty-four to thirty-six hour period for individual weighing 150 pounds, an initial dose of 11 c.c. of tincture followed in six hours by 5 c.c.; in six hours by 3 c.c. and thereafter 2 c.c. each six hours until digitalization has been produced. The slower method, however, requiring three to six days, is safer, and more satisfactory in the majority of cases. Roughly speaking, 2.25 gm. dried leaves—22.5 c.c. of tincture—is required to digitalize the 150 pound individual. If the slower procedure is selected, we must add sufficient quantity to take care of daily elimination.

As a complication, or late manifestation, of myocardial insufficiency, we often find it necessary to treat edema, of varying degrees; this condition is usually associated with symptoms of hypostasis in lungs, liver and kidneys, as well as gastro-intestinal disturbance, pulmonary edema, and so forth.

In cardiac dropsy, digitalis may be all that is required to bring about satisfactory renal elimination and disappearance of edema. However, many cases do not respond to digitalis alone, and we are forced to seek more powerful diuretics and more careful supervision of diet and fluid intake is indicated. Some of the medicinal preparations which may be used to advantage are: urea, a safe diuretic to be used in edema in absence of uremia; ammonium chloride, alone or in association with novasurol or merbaphen. The

latter preparations are administered in 1 c.c. doses intravenously, first day, gradually increased each second day until satisfactory elimination is obtained or contraindications become manifest.

The remedies mentioned above are all valuable aids; however, we must not overlook the value of complete body rest in the treatment of cardiac failure. If rest cannot be obtained otherwise, then morphine, which is considered one of the best heart tonics, should be employed.

#### SUMMARY

In this discussion, an effort has been made to stress the importance of early diagnosis of all heart disturbances and to initiate the proper treatment procedure; again to call attention to the fact that murmurs are not necessarily an indication for invaliding the patient, or for instituting treatment; that our action in all cases should be guided by the functioning capacity of the heart; that digitalis preparations are now well standardized—therefore, it is not necessary to seek special preparations in order to obtain maximum benefit. Digitalis, in spite of the more modern teaching of its specific action and therapeutic indication, is still prescribed in an empirical fashion. In treating myocardial insufficiency, one of the most important procedures is body rest, and morphine, used temporarily, is one of the best known heart tonics; also, in treating edema, there are a number of diuretics which may be employed to the advantage of the patient.

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## EARLY CANCER RECOGNITION WITH SPECIAL EMPHASIS ON THE CERVIX

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(Read before the Medical and Surgical Association of the Southwest, meeting in Phoenix, Arizona, Nov. 8, 1929).

Here, in the semi-arid regions of the Southwest, where congregate the tuberculous from many states, we are inclined to consider tuberculosis the greatest medical problem of the age; and from an economic point of view it still holds first place, attacking, as it does, the younger generation, whose earning capacity is thus greatly impaired. Through a campaign of education during the past twenty-five years, the mortality from tuberculosis has been reduced twenty per cent. and during that same time the mortality from cancer has increased twenty per cent.

According to the Bureau of Vital Statistics of the United States Government, in 1900 cancer was seventh as a cause of death. It has gradually but steadily advanced until today it is fourth as the cause of death, being preceded only by pneumonia.

It is in the hope of checking the ravages of cancer that a wide-spread campaign of education along the lines of early detection and treatment, is being carried out. I believe in the next ten years the profession and public will be as well informed on the subject of cancer as they are on tuberculosis today, and it is up to us to enlist the full cooperation of the profession and public in this very laudable endeavor. When that time comes, cancer and certain death will not have the same meaning as it has to many people today. The scientific world knows it, but the truth has not yet reached as many men and women as need to have the knowledge. Cancer does not mean certain death—even though over 110,000 persons succumb to it in this country annually. One of the distressing facts as revealed by statistics is that the more highly civilized and congested the population becomes the higher the death rate. Improved sanitation is not capable of producing any effect and personal hygiene has but a limited application; rich and poor are alike affected. It is, therefore, necessary to attack this scourge in some other way.

The aboriginal people have it all over us on the cancer mortality. The statement has even been made that no full-blooded Indian woman of either North or South America has ever had a carcinoma of the breast, yet over 10,000 women die with cancer of the breast every year in the United States. If anyone has ever seen a case of carcinoma in

the breast of an Indian woman it would be of unusual interest to report it.

Just as, in the fight on tuberculosis, the family physician and the public had to be instructed to think of tuberculosis in the early stage, so must they be instructed to think and act early in cancer. It would matter little how good your tuberculosis sanatorium if patients were permitted to develop cavities before they were referred for treatment. The same is true in cancer, failure to recognize the condition and act promptly is responsible for a large majority of cancer deaths. It matters not to whom a cancer patient may go for treatment, if the growth has already spread beyond all possible chance of its destruction or removal, it is sure to prove fatal.

The success of the campaign to reach cancer cases early must, as it does in tuberculosis, rest on the shoulders of the family physician. It is he who is the key man in the cancer team. The family physician will be the first person consulted and to him, after the special treatment, the patient will return. The condition and length of life of the returned patient will be determined very largely by the stage the cancer has reached when first diagnosed. This brings us to the necessity for the periodic examination by the family physician, and in all patients past thirty-five years of age, early cancer is to be kept constantly in mind. Examination on the birthday constitutes an ideal arrangement—let the examination be thorough and complete and a careful record kept of it.

Last spring, while I was acting as a member of the Cancer Committee, in conjunction with the President of the State Medical Association and our County Health Officer, we jointly made talks before Civic and Women's Clubs and at the school houses up and down the valley. We stressed the value of yearly examinations by the family physicians. From the way the talks were received, I feel certain that the public are eager to improve their health conditions. I was told that, subsequently, many people presented themselves for examination.

I wish to cite an example of how not to make an examination: A gentleman, feeling there was something worth while to our plea for periodic examinations, called on his physician and, instead of making a careful examination, the Doctor swapped a few good stories, asked a few questions and then told him he was all right, to go on and forget it. This gentleman went to another physician the next day, told of his experience, was examined and gladly paid for the examination. The physician who slighted his work is one

of those who are hollering their heads off to the effect that the men doing special work are leaving nothing for the family physician to do— while they are neglecting their duty to their patients and the public. It is time that an earnest campaign of preventive medicine be begun within our profession and carried to all branches of society. When the yearly examination has been sold to the public as an economic and life extension measure, they will gladly report for examination. That will mean 119,000,000 examinations — more than three a day for each practicing physician. Then there is the immunization from diphtheria, typhoid and scarlet fever. The field of medicine is far from being well cultivated and, for the benefit of the doctor as well as the public, it is time that we devote a few hours to the acquisition of a little knowledge about our wonderful animal bodies, and how to take care of them. Up to the present, our principal education has come from the insurance companies and, while they have laid the greatest stress on the value of a policy to protect our heirs, they have nevertheless studied their mortality statistics and realize that in periodic physical examinations they have an asset: hence, the Life Extension Institute, and similar life insurance movements.

If I were in general practice today, I would keep a list of the birthdays of my patients and one week in advance of the birthday I would write each one a letter telling him of the value and advisability of a yearly examination. I am sure that it would meet with general approval. The automobile dealer from whom I bought my car sends me a card regularly, stating that the car is due for inspection on a certain date. Most people, I believe, would appreciate receiving as much consideration as an automobile.

At the time of the yearly examination, the family physician, as the key man in the cancer team, will not only detect early cancers but he will do even better, he will discover and remove the conditions which so commonly lead to cancer. Many cancers give us warning a year in advance of the time the cells take on the rapid uncontrollable multiplication without regard to function, that we know as cancer.

Most cancers are preceded by various forms of chronic irritation and it should be the duty of the family physician to set in motion the corrective measures for these conditions when they are discovered, and let it matter not in what part of the body they may be found. Remember, there is no more distressing death than cancer of the rectum, and it is appalling how many are treated for hemorrhoids in their incipency.

Much that I have said so far can, with equal propriety, be applied to the early development of cancer on the skin, in the mouth, breast, and elsewhere; but what I desire, at this time, is to focus our attention on cancer of the uterine cervix, variously estimated to cause from thirty to thirty-five per cent of the cancer deaths in the female. Undoubtedly, a great many of these patients could be saved by routine physical examination and prompt application of treatment directed to the abnormal conditions frequently present on the cervix as a result of lacerations or infections.

There is probably no accessible lesion, as amenable to treatment, that is so badly neglected, both by physicians and the women themselves. Not all physicians are alive to their duty in these cases. A survey conducted by the Pennsylvania State Cancer Committee in 1910, showed that of the women being treated for cancer of the uterus, ten per cent did not receive a local examination when they first consulted a physician. After an educational campaign of thirteen years, a re-check was made and only seven per cent had at first been treated without being examined. It was found that ten per cent of the physicians first consulted were responsible for fifty-one per cent of the delay in starting treatment. The average delay being nine and a half months. Certainly, as Dr. Pancoast states, these ten per cent have a great deal to answer for. Fifty-seven per cent of the physicians who encountered carcinoma of the cervix permitted of no delay in attacking the growth; many others wasted months in local treatments, thinking they were dealing with benign conditions.

Definite diagnosis of very early carcinoma of the cervix is not easy and it is no reflection on the family doctor when he cannot himself make a positive diagnosis. There is an old saying, and a true one, that the more simple the diagnosis, the more fatal the case. In the very early states, the diagnosis is dependent on a microscopical examination and, while there is an element of danger in removing a section, it is not to be compared to the dangers attendant upon delaying an accurate diagnosis. Unfortunately, very few cases are detected in the early stages. Very early cancer gives no detectable symptoms and can be recognized only by a physical examination. One of the greatest drawbacks to early recognition is a very pernicious belief among women that, during change of life, abnormal discharges and bleeding are to be expected; until this age-old belief has been uprooted, the mortality is certain to be high. Carcinoma of the



cervix begins either as an indurated nodule beneath the surface and without loss of tissue, or as a circumscribed indurated ulcer. The first form must be differentiated from a cyst, scar tissue and myoma. If a cyst is suspected, usually by the bulging and glistening of the mucous membrane, a puncture will reveal clear cystic fluid. Scar tissue will remain constant on subsequent examinations. Scar tissue is always to be regarded as suspicious. Cancer does not develop in scar tissue, but it frequently begins in tissue adjacent to a scar. Small fibroids may feel like a beginning carcinoma, but they are usually multiple and to be found in the body of the uterus. A history of menorrhagia is also important.

An ulcer of the cervix is to be differentiated from erosion due to lacerations with eversion, mechanical pressure either from a pessary or malposition of the uterus, an irritating uterine or vaginal discharge, infection from gonorrhea, tuberculosis, syphilis or chancroid. In each instance, the symptom which brings the patient for treatment will be a vaginal discharge, sometimes streaked with blood. If the ulcer spreads rapidly, it is probably chancroid. A chronic ulcer resisting treatment is probably syphilitic, tuberculous or malignant. Examination of scrapings for spirochetes and tubercle bacilli should establish the absence or presence of the first two, and the time-honored application of a pledget of ten per cent copper sulphate held against the ulcer for one or two minutes every third day, with antiseptic douches in the interval, will usually clear the diagnosis. The bleeding will be increased if you are dealing with a cancer.

The greatest cause of delay in reaching the cancer of the uterus patients early is the failure on the part of the women past thirty-five years of age to realize the serious possibilities of a blood-streaked vaginal discharge the day following coitus, a douche or some unusual effort on the feet; also, their failure to consider a leucorrhoeal discharge as a disease that should be remedied. So many times the warning signals are ignored because women at the cancer age become accustomed to menstrual irregularities and they have not been instructed as to the seriousness of the "spotting" symptom.

It is my hope that, as a result of the discussion this paper may provoke, we will return to our respective fields of endeavor and do more than we have in the past to educate our clientele to submit to a yearly physical examination, this examination in women to include the pelvic organs, and that, in the event any precancerous condition is found,

we will see that the same is promptly removed and a proper hygiene established. Certainly, this is not too much to ask of us who are entrusted with the physical welfare of those who support us. When we stop to think that, of the women who enter our office and who die between the ages of forty-five and sixty-five, one out of five will die of cancer, we cannot ignore the importance of keeping malignancy constantly in mind.

#### DISCUSSION

DR. R. B. HOMAN, El Paso: I should like to emphasize the remarks about physical examinations. Recent experiences have convinced me that people are anxious to have doctors tell them what to do; they want to be told how to protect themselves from disease and prolong lives. The diseases in which the mortality is being reduced are the infectious diseases, where the results depend on the work of the physicians. Those diseases which depend on the education of the people are the diseases which are increasing in mortality.

DR. E. PAYNE PALMER, Phoenix: Dr. Cathcart's paper covers a very important subject, the importance of which should be fully realized by the medical profession and the laity. With a death rate, from cancer, of 100,000 in the United States annually, it is time to sit up and take notice. Unfortunately, the onset of cancer is insidious and frequently symptomless for a long period of time. If it were not for this fact, the urgency of emergency treatment for all cases of cancer might be realized both by the medical profession and the laity.

The "pathological cervix" is frequently the source of metastatic infection and is usually overlooked, while teeth and tonsils are removed and the sinuses treated for infection. The "pathological cervix" which is due to neglected lacerations at childbirth, can, and should, be prevented by immediate repair of the laceration. When done in a hospital under strict or aseptic precautions, satisfactory healing will follow and a pathological process will be prevented.

Nonspecific infections of the cervix and cervical mucous membrane are, in the majority of cases, due to lacerations that result in erosions, ectropion, cysts of the Nabothian gland and hypertrophy of the lips. Ulceration of the cervix must always be regarded seriously and if it does not heal promptly after appropriate treatment, biopsy should be made. Chronic cervicitis of the ulcerative type, with cellular changes and rich in mitoses, constitute a precancerous condition and favorable environment for the development of malignancy. Erosions, unhealed lacerations of the cervix and a cervix that bleeds easily should be considered precancerous.

Cancer of the cervix occurs almost exclusively in cervixes that have had some inflammation or traumatic lesion, usually the result of childbirth. It is estimated that about ninety-eight per cent of women with cancer of the cervix have had children.

A very careful physical examination is not sufficient to make the diagnosis in any of the very early cases of cancer of the cervix. Biopsy should be resorted to more frequently, as there is no other way to make diagnosis in the very early stages of cancer of the cervix. As soon as the diagnosis of cancer is made, the case calls for emergency treatment. Watchful waiting means certain death.

DR. G. WERLEY, El Paso: I am strongly in favor of everything advocated in this paper and discussion. I do not feel that you can scare people too

much. Dr. Cathcart's paper is of extreme value in pointing out the fact that cancer, or diseases leading to cancer, taken early are curable. Since the discussion has broadened into the general one of education of the public, I am led to inquire in what manner the public can be educated in heart disease. The first thing is to educate the doctor; get the doctor to study heart disease so that he will be prepared to give advice on the points raised. Until you get the doctors prepared, you dare not tell the people to go to the family doctor, because they will not get the proper advice.

DR. WILLIAM DOCK, San Francisco: It seems to me that, in preference to the periodic health examination, it is much more important to educate people to come for examination regarding the first symptom which indicates illness. This is better than a superficial examination once a year. It is much easier to do a biopsy on a patient who comes with the first symptom, than it is to do this on a patient coming for examination.

DR. CATHCART (closing): It will be interesting to observe what will be the effect of cigarette smoking by women on the incidence of cancer. Also, to note the effect of the abolishment of the corset on the incidence of breast cancer.

## CHRONIC PROSTATITIS

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(Read before the Maricopa County Medical Society, at Phoenix, Ariz., at their meeting in December, 1929.)

The title limits this paper to the chronic inflammations of the prostate gland. The chronic hypertrophied prostate is not included in this paper, although by some it is considered an inflammatory condition.

By far the majority of the cases, probably about 95 per cent, are of gonorrhoeal etiology. The next most frequent class are those following a gonorrhoeal infection but in which the gonococcus has disappeared, the inflammation persisting because of secondary infection probably due to improper treatment. The next most frequent class are considered as due to focal infection elsewhere in the body. The other class is tuberculosis of the prostate which happily does not make up a large per cent.

The symptoms complained of consist of the "morning drop," backache and indefinite pains in the perineum and penis and, at times, in the groins and thighs. Occasionally there will be urgency and frequency of urination, rheumatoid or arthritic pains and cloudy urine.

The findings on examination show, in about one-third the cases, some abnormality of the prostate to palpation. It may be enlarged but there is normally considerable variation of the gland, but as a rule the size corresponds to that of the patient—a large man normally having a larger gland. There may be irregularity in contour—one side larger than the other. Nodules may be pal-

pable in the gland and are usually due to chronic infection but may be caused by stone or cancer. Frequently we find a soft, boggy feel to the gland which is very suggestive. Tenderness is present in about half the cases. Here again we must be cautious, as normally many men are very sensitive to rectal examination, especially to pressure on the prostate and may complain of much pain when in reality there is no abnormality demonstrable of an infectious nature. Again there may be a prostate loaded with pus in a non-sensitive type of individual who will evidence no sign of tenderness even on hard pressure. Experience alone will allow one to reach a conclusion.

Examination of the urine shows a clear first glass; a cloudy first and clear second; or all cloudy, depending on the activity of the infection.

The most important evidence of prostatic infection, and the only one on which to base evidence of cure, is the prostatic smear. It is important that this be taken properly and, still more important, properly interpreted. Care must be taken not to strip the seminal vesicles as this would dilute and render examination of the prostatic fluid practically worthless. The seminal vesicles cannot, as a rule, be palpated in the normal state, but inclusion of their secretion in the specimen can be determined in the normal condition by the presence of spermatozoa. At times the seminal vesicles seem to lie so low over the prostate as to make it impossible to get a true prostatic smear. The bladder should be emptied of urine, by voiding before massage, for two reasons; so as not to get urine in the prostatic specimen, and in order not to contaminate it with secretion from the anterior urethra. A little pus in the anterior smear signifies little but the same amount in a prostatic smear may mean a considerable prostatic infection. The prostate is emptied by the downward stroking of the finger in the rectum with the patient bending over at right angles at the hips. The last stroke should be in the midline and continued downward to force the expressed secretion through the cut-off muscle. The glans penis is placed in a medicine glass held by the patient to catch the expressed prostatic secretion. Often the major part of the secretion will accumulate in the bulbous urethra which acts as a sort of pocket but this is easily emptied by gently stroking the urethra from the perineum to the external urinary meatus.

The secretion so obtained is smeared fairly thick on a slide and allowed to dry. Some prefer to examine the specimen in the wet state for pus content. I prefer the stained



specimen, using simple methylene blue stain. Here again difficulty is encountered in obtaining a good stain, for if the secretion is not fixed to the slide by sufficient heating it will wash off when rinsing off the stain, and if heated too much it coagulates so as to be unfit for examination. For this reason, I always prepare two slides of each specimen and in about one-third the cases have to try the second slide to get a good stain.

On microscopic examination under the oil-immersion lens, the presence of more than five leukocytes per field indicates a definite infection, but, as a rule, a normal secretion will not contain more than one leukocyte to several fields. This questionable zone up to the five cell point seldom concerns us, for, as a rule, the leukocytes are much more numerous or the field is normal in leukocyte content. Another thing indicative of a normal secretion is the presence of lecithin granules which we rarely see in the presence of infection. Frequently, on the first examination of a smear from a patient, portions of the smear appear practically normal but we find clumps of cells scattered about; these are usually the very chronic cases and on beginning active treatment the leukocyte content will increase for a time but there will be a more even distribution. The presence of spermatozoa should be noted to determine if specimen, at least partially, came from the seminal vesicles.

The bacterial content of the smear is of much less importance than the leukocyte content. Gonococci are very hard to find in prostatic fluid even in the average case of fairly acute prostatitis. Other bacteria are likewise scarce, but, as a rule, the type of infection can be found if searched for, but we must always bear in mind the danger of a contamination from the urethra, especially the external urinary meatus. In tuberculous infection, the tubercle bacilli can usually be demonstrated, at least if a series of smears are taken. Cultures, as a rule, are worthless except for vaccines as the possibility of contamination is too great.

The diagnosis depends on rectal palpation of the gland, the prostatic smear, the urethral smear, examination of the urine, history and at times cystoscopic examination. Examination begins first with an attempt to strip some secretion from the urethra for a smear. Examination of this will as rule show the gonococcus if the case is of gonorrheal etiology. It is often well to give the patient a slide with instruction as to obtaining a smear of the "morning drop" which will often show the gonococcus. Other bacteria have little bearing on the etiology of

an accompanying prostatitis but a positive gonorrheal finding practically establishes the diagnosis. The patient then passes the urine in several glasses. All the urine may be clear and there still be prostatic infection in a very dormant condition. As the rule, the first glass shows a slight cloud which may come from the anterior or posterior urethra or bladder. With a clear second glass, it comes from the urethra, anterior or posterior, or both. If all glasses are of the same degree of cloudiness, the condition is all prostatic, bladder, or above the bladder. As a rule the first glass shows a denser cloud showing the infection in the urethra also. At times the last glass shows a denser cloud which is due to pus in the base of the bladder or a stripping out of the pus from the prostate as the bladder collapses, the pressure exerted to force urine from the bladder apparently extending to the prostate gland which is closely apposed to the base of the bladder and interwoven with its structure.

The above conclusions apply only in case the cloud is due to pus. On every examination where there is a cloud present, acetic acid should be added to clear up any cloud due to alkali and in this locality about half the cloudy urine is due to alkali, which is not harmful but must not be confused with a cloud due to pus. At times there may be a cloud due to spermatic fluid and at times a bacteruria which must be determined by the microscope, but the latter two are rarely encountered.

Next, the prostate is palpated per rectum and may show any of the abnormal conditions mentioned above, but usually no definite evidence of infection will be perceptible by this method. The prostate is then stripped to obtain material for microscopic examination. The seminal vesicles should also be examined to determine if palpable but are not stripped. Rarely is there an infection of the seminal vesicles accompanying the prostatic infection, at least, that we are able to determine and happily, too, as infection of the seminal vesicles are very refractory to treatment.

Examination of the prostatic secretion microscopically is the most important part of the examination and on the leukocyte content is based the presence or absence of infection. The type of infection is not so easy to determine for, as a rule, the bacteria causing the trouble are not in evidence on the smear and even when found, with the exception of the gonococcus, are not conclusively the cause of the infection; they are so scarce as usually to suggest a contamination. The urethral smear, if positive for the gonococ-

cus, is practically conclusive as to the nature of the prostatitis.

Cultures, as stated before, are practically worthless; the gonococcus will hardly grow at all and the positive cultures of other bacteria are more often than not contaminations. The history of previous urethral infection may determine the gonorrheal nature, but even here, the gonococcus should be found before beginning active treatment. The complement fixation test is of practically no value and at present I rarely use it. A positive test is very suggestive, but I would not consider it conclusive evidence of the gonorrheal nature of the infection. A negative test would also suggest that the condition is not gonorrheal. However, the results are not conclusive, and, as the treatment varies little in the different types of infection, it is rarely worth the cost to the patient. Furthermore, the previous use of gonorrheal vaccine renders the results more doubtful,

The prostatic infection may be the result of improper use of syringes or instruments during a case of gonorrhea, resulting in the implantation of secondary infection in the prostate, the gonococcus itself having disappeared. Cases without a history suggestive of a urethral infection are usually ascribed to focal infection as a cause, and, in about half these cases, other focal infection is demonstrable and in perhaps half of these there is improvement of the prostatic condition following its removal.

At times there is probably a localization in the prostate of an acute systemic infection which does not clear up with the systemic condition but remains as a chronic prostatitis. Likewise, constipation is probably a frequent cause of trouble both from absorption of colon bacilli and because of congestion in the prostatic region due to the pressure of the fecal mass.

We also have tuberculosis of the prostate which, as a rule, is secondary to tuberculosis either in the epididymis or the kidney. Hugh Young claims the primary infection to be in the prostate, but he is practically alone in this contention.

**Treatment** depends on etiology. I will consider first the gonorrheal type. Drugs by mouth are practically worthless; the only effect obtained with antiseptic drugs is during the passage of the urine through the prostate on urination, which is too fleeting, in the concentration possible, to be of any value. Sedative drugs in conditions that are at all acute are worth while; e. g. hyoscyamus and the alkalies and possibly oil of sandalwood. Pyridium, hexresorcinol and all the other drugs for oral administration are, in

my opinion, absolutely worthless; likewise mercurochrome intravenously.

Rest is an important point, physical and sexual; the latter perhaps is a little more important. Alcohol must be prohibited. Moderate physical exercise is permissible but such exercise as riding a motorcycle or truck is very detrimental.

Local treatment is the important method. Prostatic massage is, I believe, very useful but should be done gently and should never at any time cause pain. As the condition improves, massage can be increased, the stimulation to the gland probably being more important than any results from emptying it of its contents. Massage is followed by bladder irrigation, usually of silver nitrate beginning with a quart of 1:10,000 solution and increasing the strength of the drug as the reaction of the patient will permit. I believe silver nitrate to be the most important drug we have for local use in genito-urinary infection. It apparently is not only the antiseptic value of the drug, but a peculiar favorable reaction produced on the mucous membrane of the genito-urinary tract, that is efficacious. The following day the patient takes a deep injection to the bladder of mercurochrome which he retains for an hour. If there is any anterior urethral infection, he also takes two or three anterior injections a day which he retains five minutes by clamping the meatus. Begin with one-fourth per cent mercurochrome and run up to one per cent for posterior injections and two per cent for anterior injections. I am particular that the Asepto outfit be used, which insures the use of a sterile syringe for his injection. Other drugs, as acriflavin, potassium permanganate, protargol, etc., are sometimes employed, but, as a rule, main reliance is placed on silver nitrate and mercurochrome. All solutions and apparatus must, of course, be sterile and the silver solutions must be in distilled water.

Vaccines are a routine but their value is doubtful. A stock vaccine is preferred, straight gonococcic for gonorrheal cases and mixed vaccines for other cases and old gonorrheal cases. Begin with small doses (.1c.c.) and increase as permissible without getting more than one inch area of hyperemia, injections every other day. A maximum dose of one cubic centimeter (five billion gonococci) is kept up as long as treatment continues. Autogenous gonorrheal vaccines have not been used, and I have read no favorable reports on them but theoretically they appeal to me.

Surgery has at times to be resorted to for prostatic abscess but that rarely concerns chronic prostatitis. Any strictures present



should be dilated and a prostatic infection will at times not clear up until this is done.

Of physical agents, light and heat have been used. The use of ultra-violet light has been recommended but in my experience has been of absolutely no value. Hot rectal irrigations are of much help in acute prostatic conditions and may be of some benefit in chronic conditions. Diathermy to the prostate is merely another form of heat and although used rather extensively, is of doubtful value. Certainly there is no germicidal effect. Infra-red radiation is another type of heat,—incidentally the electric bathroom heater is a dandy,—which is very penetrating and of some slight value but more in acute conditions.

In the non-gonorrheal prostatitis, the treatment is practically the same except the use of a mixed vaccine to replace the plain gonorrheal vaccine. I have had one case resistant to all other treatment that cleared up nicely on an autogenous vaccine from the prostatic secretion. Focal infection is sought out and eliminated if possible and I have seen definite favorable results thereby.

In the tuberculous prostate, little can be hoped for from local treatment, mercuriochrome deep injections seem to give more relief than anything. Removal of the infected epididymis or kidney is indicated if possible. Prostatic infection, otherwise, is practically, if not always, curable, but the treatment often requires one to four months, occasionally longer. During the course of treatment the urine clears first and there is, as a rule, a gradual lessening in the amount of the pus present in the prostatic smear. This at times drops off suddenly to normal.

A normal prostatic smear, with another normal smear in a week, means that the patient is cured of his prostatic infection. I have yet to see a case of gonorrhea which had extended to the prostate, which was not cured of his infection on obtaining normal prostatic findings. The reverse is not the case; frequently have I seen cases with viable gonococci still in the prostate with all urinary and urethral findings negative as to gonorrhea, and unfortunately at least two of these were patients who had been examined before marriage by physicians and pronounced cured, only to transmit their infection to their brides. This could have been prevented had a prostatic smear been taken, as above directed, and every case of gonorrhea should have a negative prostatic smear as regards pus content before being pronounced cured of his infection.

## TREATMENT OF GONORRHEAL OPHTHALMIA

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(Read before the Maricopa County Medical Society, at Phoenix, Ariz., December 2, 1929.)

Have you ever thought of the number of people in the United States today who are blind, and do you know that nearly twenty per cent are so from some form of gonorrheal infection? I will speak mainly on the treatment of this disease at this time.

Probably the number of different drugs recommended for the treatment of this dread disease would run into the hundreds, and are recommended by as many different physicians throughout the world. Yet, today, we are earnestly and solicitously inquiring about a cure that will cut the infection short and rob the pathological process of its dreadful sequelae,—corneal ulcers with consequent opacities, ruptured globe, staphyloma and final darkness.

Gonorrheal ophthalmia is an acute and severe form of pustular conjunctivitis, caused by the infection from urethral discharges containing the gonococcus of Neisser. Most physicians are familiar with the severity of this dread disease and the long drawn out, drastic and detailed treatment necessary to prevent total blindness, so I will say practically nothing concerning the pathology and the older and universal methods of treatment, but will give in detail the treatment which has proven one hundred per cent effective in the small series of cases I have had.

It is with considerable reluctance that I am reporting this series of cases as I had hoped to try my method on more infections, but since they are considerably scarce in this section of the United States and because of the satisfactory and astounding results in such a serious disease, I felt that I would not be doing my duty to the medical profession should I wait longer. Some of you will perhaps recall my reporting a case as early as 1926 here before this society.

The technic is very simple, yet it must be exact and is as follows:

The eye is cleansed of as much pus as is possible, with the idea that the rays must come in direct contact with the tissue involved. The conjunctival folds are everted (the great swelling of the lids made this very difficult in two cases) and the long pharyngeal quartz applicator on mercury ultraviolet lamp that has been standardized, is held almost touching both the upper and lower lid conjunctiva, averaging a duration of forty seconds each. This is the time required for

my lamp. The patient is directed to look either up or down, in or out, which will avoid the rays coming in contact with the cornea, which should not be treated with the rays unless it is involved. In case of corneal ulcer, which occurred in only one of my cases, I employed the usual treatment, and the ulcer disappeared as rapidly as did the conjunctival infection. This part of the treatment is followed by the usual sovereign remedy, two per cent silver nitrate, with instructions to irrigate the eye every hour with boric acid and instill one or two drops of two per cent mercurochrome solution every two hours. I used the latter part of this treatment years ago, with the patient in bed in the hospital with day and night nurses and the usual time required for cure was three to six weeks.

The ultraviolet ray treatment was given each day in four cases which involved six eyes, and the number of treatments was as follows: One case required four exposures before the pus disappeared, one required five, another three and another only one.

Case 1: Referred by Drs. Bailey and Robb. Male child, three and a half years old, both eyes involved, lids tightly closed due to great swelling, profuse creamy pus running down each cheek. Pus examined and found to be full of gonococci. Cornea not involved. Child seemed to be in great distress, but was far from equalling the apparent distress of the parents. The first treatment was given at 6:30 p.m. Sept. 22, and by three o'clock the next morning the anxious mother, who carefully watched and treated the child each hour, stated that it first began to open the eyes, and when seen at my office about 10 a.m. Sept. 23, both eyes were about three-quarters open and I gave only one more treatment. Eyes were completely cured in six days and with no sequelae.

Case 2: Male adult Mexican, one eye involved. Swelling was tremendous and pus profuse as we usually see in such cases. One treatment was given at the office and the usual home treatment directed. Patient was seen the next day and the swelling and pus were all gone. No further observations were made as he never returned.

Case 3: Male Mexican, age 23, referred by Dr. Garrison. Both eyes involved, right much worse than the left. Patient claimed to be in great pain which was due largely to a right corneal ulcer. This case received five office treatments, in conjunction with the home treatments which extended over a period of eleven days. He claimed he had been treated about ten days before I saw him.

Case 4: Referred by Dr. Charvoz. I think this was the most pitiful case I ever had. A little girl, five years of age. She had a severe vaginal infection and consequent gonorrheal peritonitis. Her abdomen was so distended that she could hardly breathe and each breath, which was so very rapid, was accompanied by an audible grunt. She could not sit up and it was necessary for her to be held in a reclining position by the nurse long enough to take the ultraviolet ray treatment. One eye was involved, and the pus was very profuse and the swelling great. Laboratory findings showed gonococci. Four treatments were given, one each day, and at the end of eight days her eye was completely cured and with no sequelae.

## DISCUSSION

DR. H. T. BAILEY: Dr. Yandell has not told half of it. We sent him several patients during 1929. Many times for various reasons we did not want these cases around our office, mostly on account of others fearing they will contract this disease. There is very little danger, however, as some of our best authorities claim that soap will kill all gonococci it comes in contact with. So all that is necessary is to wash the hands thoroughly with soap and water.

There are a number of germicides for gonococci. A temperature of 32° F will kill them almost instantly. A temperature of 107° F will kill them almost instantly. They live and grow in a temperature from 77° to 100° F. and in the presence of moisture. The advocates of physiological saline ice-packs can only secure a temperature of 38° F at the most, and that only retards them. Heat of 107° or more in the eye will destroy them.

Silver nitrate will kill them but it leaves a coat of silver albuminate on the lids after applications; too, the liberation of nitric acid in the eye is an irritant. Permanganate of potash is rather uncertain. Sun light will kill them but the quantity or dose is hard to control, and it is very likely to cause a severe conjunctivitis or cellulitis and if it shines directly on the macula it will likely cause blindness.

Ultraviolet light is more nearly a specific and, if handled carefully, is not harmful. These rays are probably nature's greatest sterilizing agents. They are the rays lying between the visible violet and the x-ray zone; they keep air and water pure and doubtless prevent many epidemics. They are the rays between 2900 and 3200 Angstrom units. These are only about two per cent of the rays given off by the sun and vary on account of dust, smoke and other gases in the air, as much one hundred per cent from day to day while they constitute a large percentage of the rays given off from a mercury quartz lamp. They are absorbed readily by oxygen. It is ultraviolet light in rarefied air, that causes mountain air to be more invigorating than air of lower altitudes.

Because of the concentration of ultraviolet rays from a mercury quartz lamp and because of the almost perfect control of the dose or the amount given, this treatment is so effective as a local germicide. It is effective not only in gonorrhea but in tonsillitis, Vincent's angina, sinusitis, nasal and aural polypi and many other surface infections. Some one of the fluorescent dyes, as mercurochrome, acriflavin, gentian violet etc., applied to the surface before the treatment makes the ultraviolet rays more germicidal because the dye seems to carry the ray to the diseased cell.

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INTERNATIONAL CLINICS:—Edited by Henry W. Cattell. Volume II, Thirty-Ninth Series, 1929. J. B. Lippincott Company, Philadelphia and London.

This volume contains an unusual number of interesting articles. Perhaps the article which is most striking is "Manners and Morals;" this is a question of medical ethics by Dr. Lewellys F. Barker, a lecture to medical students. The possibilities are that most of us physicians will profit by reading this article.

Other interesting articles in this volume deal with chronic nephritis, the periodical physical examination, inflammatory diseases of the liver, the aged prostate, treatment of pneumonia, diagnostic value of some reflexes, pyelitis, etc.

O. H. B.



## DIAGNOSTIC FORUM

### CASE OF DROWSINESS AND SWELLING OF THE FACE

(Case 14411, Case Records of the Massachusetts General Hospital, New Eng., Jour. of Med., Nov. 29, 1928, p. 1106).

#### CASE HISTORY

An Irish-American widow sixty-five years old entered the hospital May 13 complaining of dizziness and slowness.

Four years before admission she had an attack of erysipelas of the face and region of the left ear. Ever since this time her cheeks had lost color and the skin about her eyes had been puffy. She had had three later attacks of erysipelas. For three or four years she had had increasing weakness and slowness in movement. For three years her skin and hair had been growing dry and the circulation in her hands and feet, always poor, had been getting worse. She had been hoarse, although she never had sore throat. In the past two years she had had a slight general loss of hair. For a year she had had a tendency to trip, and had been dizzy after quick motions of the head or when she looked at moving pictures. During the past year her hearing, eyesight and memory had been growing poorer. Recently she had had a tendency to fall asleep, and slept so much during the day that she did not sleep well at night. During the past month her hands had grown very swollen, spade-like and blue. In the past two weeks she had had some dyspnea when she was nervous or hurried. She urinated two or three times at night, and lately had had some urgency. She had lost a few pounds in weight.

Her father died of tuberculosis while she was living with him. One sister had had a nervous breakdown following an unfortunate investment.

The patient had had three or four miscarriages at three months and lost one of her two children the day after birth. She was operated upon for falling of the womb after one delivery. All her teeth had been extracted for pyorrhea. She had some palpitation on exertion or excitement. For years she had had swollen joints in the hands and occasional pains in the hips, due she thought to arthritis. She had gas, relieved by hot drinks. She ate no meat because of high blood pressure. For two years her bowels had required laxatives.

Clinical examination showed an obese woman, asleep and hard to arouse. Voice low, speech slow. Skin cool, subicteric, dry and scaling. Hair coarse and dry. Face rough, cheeks red. Swollen loose skin about the eyes, which opened with difficulty. Whitish secretion on lids. A few keratoses over the body. Superabundance of tissue over the clavicles and upper borders of trapezius muscles. Tongue very large and long, somewhat smooth. Thickened tonsillar pillars and uvula. Small firm axillary glands. Breasts atrophic. Apex impulse of the heart not seen or felt. Left border of dullness 5.5+ (?) centimeters, midclavicular line 8.25 centimeters, right border, 4.5, supracardiac dullness 6. (Heart displaced to the right?) Rate regular. Sounds distant. A rough systolic murmur, faint in the apical region, becoming loud in the second right interspace. Left pulse greater than right. Artery walls thickened and tortuous. Blood pressure 195/110 to 145/100. Lung signs: Left chest anteriorly, flatness, diminished or absent tactile fremitus, distant bronchial breathing, egophony, increased whispered voice, over lower portion; no rales; medium crepitant rales over base posteriorly. Abdomen protuberant and tympanitis. Liver edge felt. Rounded mass in region of gall-bladder.

Hypertrophic arthritis of phalangeal joints. Pitting edema of ankles and shins. Dorsalis pedis arteries not pulsating; feet cold. Foul leukorrhea. Vagina presented small irregularities. Small non-bleeding hemorrhoids. Pupils and knee-jerks normal, ankle jerks absent. Fundi: disc outlines indistinct but not choked. Vessels not clearly seen. No obvious sclerosis. No hemorrhages.

Urine: amount 28 to 30 ounces on the two occasions recorded, specific gravity 1.016 to 1.026, no albumin, sediment of a catheter specimen negative. Urine culture: colon bacillus. Blood: 8,000 to 6,500 leukocytes. 66 per cent polymorphonuclears, hemoglobin 65 to 70 per cent, reds 3,400,000 to 3,700,000. no marked achromia, moderate anisocytosis, platelets normal. Hinton negative. Icteric index 3. Non-protein nitrogen 25. Stools: guaiac strongly positive at one of two examinations. Basal metabolic rate minus 26, pulse 73, weight 62.9 kilos.

Temperature 96° to 98.9°; usually 98° or below. Pulse and respirations normal.

X-ray examination showed arthritis of the terminal phalangeal joints and the spine, also changes suggestive of gout. There were no visible gallstones. The sella turcica was normal. There was considerable calcification in the region of the pineal gland. The left lung field showed dense dullness except for a small area at the apex. The upper margin of dullness was sharply defined. The outline of the diaphragm and the border of the heart were obliterated. The heart and mediastinal contents were displaced to the right. The right lung field was obscured by the heart shadow, and was less radiant than normal along the borders of the heart and in the region of the base.

The patient was disoriented at night and on the morning of May 18. The edema of the eyelids became marked. The veins of the arms were so engorged that the venous pressure was sufficient to push the piston out when blood was withdrawn. The lips, face, hands and feet were cyanotic. A lumbar puncture was done. The fluid was clear, straw colored, initial pressure 165, jugular compression 610+, release 195, after withdrawal of 5 cubic centimeters 160, after withdrawal of 5 more 140; two red blood cells, one leukocyte; Wassermann and Hinton negative; colloidal gold 0111100000. A chest tap gave 80 cubic centimeters of very slightly opalescent yellowish fluid. On the same day the red blood count was 4,400,000, the blood serum total protein 6.98 grams in 100 cubic centimeters, the hematocrit 38.1 per cent.

That evening the patient seemed brighter and better oriented. The next morning, May 19, she died.

The following discussions of this case were given before the Yavapai County Medical Society and Medical Officers of Fort Whipple, at their regular meeting of Dec. 10, 1929:

DR. J. T. MALONE

We are confronted with several possibilities in the differential diagnosis of this case.

If we consider pulmonary tuberculosis, we have a history of contact and pleural effusion. It is possible, but not very probable, that a well developed woman of sixty-five years would die of tuberculosis. Yet we must consider pulmonary tuberculosis on the basis of that effusion. Considering the history of contact with a tuberculous father; there is disorientation, symptoms suggestive of brain congestion or tumor, (tuberculous meningitis?). However, the fluid was not under pressure and we are told there was no evidence of choked disc; colloidal gold curve and the cell count do not indicate tuber-

culous meningitis. There is a shadow in the left chest, practically a curtain, and we do not know what is going on behind that curtain. They may find at autopsy, as in a previous case, that there is a large cavity behind this dense shadow, which we are interpreting as pleurisy with effusion and a densely thickened pleura. We can not definitely rule out tuberculosis, but we do believe the effusion can be explained in a very logical manner and that tuberculosis, either pulmonary or meningeal, is not a definite factor.

**Syphilis:** There is a history of several miscarriages and we have suggestive mental symptoms. They tell us the spinal fluid is straw colored. This seems to be a factor to consider later. We believe we can explain the straw colored fluid on another basis. There is a definite negative spinal and blood Wassermann, which is corroborated by the negative colloidal gold and cell count. These apparently rule out syphilis in any form.

**Malignancy:** We are still more or less speculating. This chest has evidently been a puzzle to the x-ray men themselves. We do not intend to make a diagnosis of malignancy. There is pressure in the region of the aorta, the left pulse is greater than the right. We propose to explain this pressure on a more logical basis than malignancy, because the x-ray findings are so very indefinite. This is an obese woman who gives no history of cachexia; she is subicteric, but not cachectic. There is a tumor in the region of the gall bladder. We would rather interpret this mass as a hydrops of the gallbladder. We are again confronted with tumors, or tumor like structures, in the vagina. We believe the evidence and x-ray findings do not warrant a diagnosis of malignancy with metastases.

There is a suggestion of encephalitis,—drowsiness, thick speech, etc.,—but the leukocyte count is apparently normal. There is no episode of pyrexia.

We believe this a typical picture of myxedema. We would interpret this pleurisy and effusion as myxedematous in character rather than tuberculous.

There is a suggestion of pernicious anemia; there is some distortion of red cells, but the blood count is not typical and the index does not confirm it. They do not tell us that the patient has been under treatment and that this is a remission blood picture. The blood picture would indicate a secondary rather than a primary anemia, with the exception that she may have been under treatment.

**Nephritis and uremia:** The catheterized urine was negative, no albumin; non-protein nitrogen within normal limits. It is possible there could have been a passive nephritis without albumin and non-protein nitrogen not elevated at that time, but we do not believe we are dealing with that condition.

We are told in the history that there is a soft systolic murmur over the apex transmitted and heard very loudly over the aorta. We read that backwards and it sounded very much better to us. The interne, listening at the apex first, heard the murmur and traced it to the base. We have, then, a systolic murmur loud over the aortic region, heard faintly over the mitral area. We are told by some of the best cardiologists today to dismiss all apical systolic murmurs. We would dismiss this if he had not mentioned that it became louder over the aortic area. The transmission is not to the axilla. It is impossible to make a diagnosis of mitral insufficiency based on a systolic murmur alone, without enlargement of the left ventricle, etc. Heart measurements do not denote enlarged or dilated heart. Percussion measurements and x-ray tell us that the heart is displaced to the right. With such a distortion of the chest as we have here with fluid

and possibly air, we can not expect percussion to be of much value.

The systolic murmur over the aortic area suggests aortic stenosis. There is no mention at all of a diastolic murmur. Authorities tell us that aortic stenosis rarely exists alone; if you examine carefully you will pick up a diastolic murmur; where there is stenosis there is insufficiency. Aortic stenosis with aneurysm fits our blood pressure evidence,—the pressure was so high in this case that the plunger was forced out of the vein. Left pulse was greater than right.

If we consider aneurysm associated with aortic stenosis, the picture would seem a little more plausible, but you do not get a pulse pressure such as in this case,—systolic 195, diastolic 110. The pulse pressure rather fits the picture of aortic insufficiency. Either from lack of data or purposely not mentioned, we do not have mention of Corrigan pulse or an electrocardiogram. Aneurysm at the arch, causing pressure on the superior vena cava or innominate vein to account for pressure in the left arm and for venous pressure in general, would still be suggestive of lues. Authorities believe that nearly one hundred per cent of aneurysms are luetic. A rheumatic heart does not coincide with the clinical picture. We do not think the cardiac condition resulted from an acute rheumatic fever, but rather the arthritis mentioned we would associate with the metabolic disturbance.

A condition which could give us this venous pressure and also account for the symptoms is arteriovenous aneurysm. These conditions are not rare and to a certain extent some writers are reporting them in greater numbers. This condition could account for the high venous pressure. The other possibility is aortic reflux or leak. All authorities agree that a water hammer pulse must be present. We do not have this evidence.

The age of our patient is against congenital heart disease, in which a systolic murmur predominates. Forty-five to fifty years is perhaps a high period of life expectancy. She gives no history of curtailment of activities in childhood, shortness of breath, cyanosis, etc., existing throughout life, or periods prior to the present condition.

The spinal fluid has been rather mysterious,—straw colored; colloidal gold has been within normal range; only two red cells found in the fluid itself. We can not conceive of two red cells giving hemolysis and straw colored fluid. We believe we are able to explain this condition and connect it with our picture.

"Myxedema heart" has been recently reported in which all cardiac chambers are dilated and the electrocardiogram shows a complete absence of the T wave. Again, from the clinical evidence, this is presumably a small heart, not a dilated one. We do not believe this to be a fact.

Pericarditis with effusion is a strong possibility. The chest yielded only 80 c.c. of fluid. We are speculating whether that fluid was withdrawn from the pericardium rather than from the chest itself.

#### DR. C. R. K. SWETNAM

We have a very interesting case. If we had the time and the ability to go into it thoroughly, we would give you a treatise on medicine.

We have a woman sixty-five years of age, with a very well marked case of myxedema. There are some other things that do not seem to be entirely accounted for by myxedema; these we must account for and other conditions we must rule out. Evidently they were very suspicious of syphilis and did a lot of laboratory work. The blood Wassermann was negative, spinal fluid was drawn and examined



thoroughly. Wassermann and Hinton were both negative; the gold curve quite normal, which seems to rule out syphilis.

Examination of the blood shows that there was anemia. The history says "No marked achromia." I take that to mean there was a slight achromia. While some of the symptoms point to pernicious anemia, there were no blasts, and there is this slight achromia which should not be present in pernicious anemia. Color index was .9; usually in pernicious anemia the index is high, 1.0 or over. There is no stippling mentioned. One of the strongest things against pernicious anemia is the normal platelets. The platelets are one of the best gauges in pernicious anemia, to know what stage it is in, and how it is progressing. In pernicious anemia, the platelets are reduced, some change in size (likely to be large,) etc. It is true we have remissions in pernicious anemia, and this could be one from the blood picture, but not with the patient in such condition; failing very rapidly. We can not imagine anyone with pernicious anemia and such failure and still show normal platelets.

This anemia which our patient has would fit very nicely with myxedema.

The urine is negative except in amount. That would fit in with myxedema,—lack of water. The only other thing in the urine as shown by culture is colon bacillus, which is evidently a contamination.

The x-ray in this case is one of the most puzzling things. Something is pushing the heart to the right side and giving a very dense shadow. We immediately think of fluid. It may or may not be combined with very greatly thickened pleura. There are no symptoms in the history, increased temperature or pain, to indicate an acute condition in that chest, unless you would call filling with fluid acute. Subnormal temperature and no cough.

The spinal fluid is very interesting. The pressure is very slightly increased but not enough to make it pathological. They do not give us albumin or sugar test percentages but they do tell us that it is straw colored. Straw colored spinal fluid is not normal. What accounts for it? Straw colored, without cells and fluid being clear, not turbid, means it has been colored by hemolyzed blood. Hemolysis, we are told, does not take place for three days after hemorrhage occurs, increases gradually for fifteen days and then rapidly decreases. This yellow color is caused by the change of the hemoglobin into bilirubin, which is dissolved in the spinal fluid. We believe there must have been some hemorrhage within the dura in the last fifteen days. There are no focalizing symptoms; no history of injury; nothing in the fluid to tell where it came from. It could be anywhere beneath the membrane or within the ventricles of the brain, but we believe it was due to congestion in the arachnoid. There is marked evidence of congestion to all organs, including the membranes surrounding the brain.

#### DR. JOHN W. FLINN

We had intended to go into detail in the discussion of myxedema but time will not permit. I will simply remind you that the outstanding feature in the disease called myxedema is decreased heat production, and this interference with metabolism is due to a pathologic condition in the thyroid gland. In the first place we will give you a definite diagnosis of myxedema and predict that the autopsy will show that many of the acini have been destroyed and that there is a good deal of proliferation of connective tissues and fibrosis in the thyroid gland.

Myxedema will not account for a great many things in this case. It will not account especially for venous engorgement nor for death at this time.

Osler tells us that patients live ten to fifteen years and die of some intercurrent disease, very often tuberculosis.

We will tell you confidentially that there has been a great tendency for us to go off into the highways and byways in search of some other disease which would account for some of the symptoms more beautifully than the disease which we mention; but when we come to analyze this we can not find sufficient evidence to justify it. It would be a pretty thing to suppose enlargement of the thyroid gland, making pressure on the large vessels in the mediastinum and causing a great many of these symptoms. After giving a great deal of consideration to the case, we have come to the conclusion that the most logical explanation of this woman's venous engorgement and of her untimely death is hypertensive heart disease with hardening of the blood vessels. There is definite evidence of arteriosclerosis, definite evidence of hypertension, and we think these are sufficient to have caused the terminal picture.

For some considerable time authorities have noticed that there is a connection between myxedema and hypertrophy of the heart and myocarditis. Formerly it was supposed that this was simply coincidental, but as one writer has told us quite recently, the point has been made that there is a definite myxedematous heart, or a heart condition definitely due to a lack of thyroxin. Whether this is true or not, we do not know. Making allowances for all possibilities, we are not taking any chance in making a diagnosis of myxedema, but we are taking a chance in making a diagnosis of hypertensive heart with probable hypertrophy and dilatation in spite of the x-ray picture.

Our diagnosis is:

- Myxedema;
- Arterio-sclerosis;
- Hypertrophy and dilatation of the heart;
- Either hydrothorax or effusion;
- Possible congestion of the uterus, the kidneys and the intestines.

The following discussion of this case was given before the Clinical Club of Phoenix, at their luncheon meeting of Dec. 9, 1929:—

#### DR. F. C. JORDAN

An American widow, aged 65, entered the hospital on May 13th, complaining of dizziness and slowness, and died six days later.

Four years ago, she had an attack of erysipelas and since, her skin has been puffy and pale; also, she has had increasing weakness and slowness. The symptoms coupled with dryness of the skin and hair, cold feet and hands, and a basal metabolism of minus 26, are found only when there is a hyposecretion of the thyroid. It is not uncommon for this condition to follow some severe infection like erysipelas. She has had three or four miscarriages at three months and one child died one day after birth. This would suggest syphilis, but a negative Wassermann with normal pulse and knee jerks would tend to rule out syphilis; yet, we must remember that brain syphilis does occur without many of the cardinal signs of syphilis. Thick and tortuous artery walls with a blood pressure of 195/110 denotes an arteriosclerosis which she probably had for some time as she was on a restricted diet for high blood pressure. Hypertensive heart disease usually causes death in one of two ways—either a cerebral hemorrhage or a gradual heart failure. The history is not typical of either although there are symptoms of cardiac distress in that she had had some dyspnea and edema of the legs which pitted on pressure. Edema caused by hypothyroidism does not pit on pres-

sure. Her blood picture is not abnormal. Is there any disease of the kidneys? She was in a stuporous condition—hard to rouse. Such symptoms could come from an impending uremia. There certainly is no evidence of any gross disease of the kidney. A specific gravity of 1016 to 1026 showed the power of concentration; no albumen, no casts were found. This, together with a non-protein nitrogen of 25 would rule out uremia. In the lung there were no rales but flatness on percussion with diminished tactile fremitus and distant bronchial breathing in the left lung. X-ray of the left lung showed dense dullness except for a small area at the apex. The upper margin of this dullness was sharply defined and the heart and mediastinum were pushed to the right. Fluid in the left chest or a new growth in the left lung could push the heart to the right. A sharply defined line would indicate an effusion. You may get a pleural effusion with a new growth in the lung. This effusion, however, is nearly always bloody while the fluid removed in this case was of an opalescent yellowish color. There was cyanosis of the lips, hands and feet. This could be explained by an insufficient aeration of the blood in the lungs due to pressure of the fluid in the left chest; also, we must remember that ingestion of coal-tar products could produce cyanosis; also, any obstruction to the circulation of venous blood to the heart. The spade-like hands are quite common in myxedema. There was considerable calcification in the region of the pineal gland. I do not know what significance this might be. Spinal punctures showed a clear fluid with normal cell count but increased pressure. We are certain that she had arteriosclerosis and hypothyroidism, probable atrophy of the thyroid. We believe she had some brain lesion, whether it be brain syphilis or softening of the brain, we do not know. We do not think she had a meningitis. The normal temperature throughout her stay in the hospital would indicate that she did not have any infectious disease. Our diagnosis, therefore, is arteriosclerosis, atrophy of the thyroid, some softening of the brain, probably due to circulatory changes or minute hemorrhages. Fluid in the left chest, hypertensive heart changes without valvular lesion.

The following discussion of this case was given before the Clinico-Pathologic Conference at the Massachusetts General Hospital (see above journal):—

RICHARD C. CABOT, M. D.

#### Notes on the History

1. I do not see why erysipelas should make her eyelids puffy. I think something else besides erysipelas produced that change.

2. Why erysipelas is so much commoner in elderly people than it is in young people is a question of which one often thinks. I suppose the degree of immunity against streptococcus diminishes as we grow older. I remember vividly a man of seventy-three who had a hangnail on his thumb. It got a little red, a little sore. Otherwise he was well. Gradually an inflammation spread up his arm. There was nothing they could operate on. There was no pus. He had very big sore glands in his axilla, with high fever. He died within a week. At necropsy he had pus in every joint. What could you say about that except that the normal immunity against streptococcus which keeps us going in spite of our hangnails fails in old people, so that they are subject to erysipelas and other streptococcus infections?

3. That increasing weakness and slowness in movement is not surprising at her age.

4. What is the history man thinking of when he records dry hair and poor circulation in the hands and feet?

A Student: Myxedema.

Dr. Cabot: That is a rare disease, so I am skeptical, but still it is possible.

There are other causes than myxedema for loss of hair. At sixty-five it is not surprising.

5. Dizziness after quick motions of the head is very common again after sixty. Generally this is said to be due to arteriosclerosis. We do not know it.

6. Her not sleeping well is not remarkable. All that we might call growing old—that is, it might be nothing but that. I suppose growing old means arteriosclerosis in the great majority of cases.

7. "Spade-like" is one of the medical slang terms, rather melodramatic. I have never seen a hand that looked like a spade. Certainly no patient would say it. It is a term that is often associated with myxedema and other diseases, but I think it is not a good descriptive term.

8. The man taking this history had the intelligence to say that the patient was exposed to tuberculosis; but still at sixty-five it is not very important. It would be very hard luck if she got as far as sixty-five and then caught it.

9. The history of miscarriages makes us think of syphilis. It does not prove it.

10. High blood pressure is the most definite thing in the history. It has been almost colorless up to that point. She was evidently told that she had high blood pressure, and that is significant. Nothing else is helpful for diagnosis. So far as we have got, the lead is hypertension and the heart troubles that go with it.

#### Notes on the Physical Examination

1. The first few statements in the physical examination suggest myxedema, but it is perfectly possible that they are simply old age plus edema.

2. "Superabundance of tissue over the clavicles and upper borders of trapezius muscles." They are thinking of myxedema. But in an obese woman, as she is stated to be, that is very hard to interpret as indicating anything important.

3. In the description of the tongue again they are thinking of myxedema.

4. The percussion measurements are probably not true. They mean from the midsternal line, and of course 5.5 is not nearly enough.

5. The heart may be displaced, but we should not say so without an x-ray.

6. In the absence of cerebral lesions the blood pressure shows that we certainly have hypertension.

7. These lung signs are equivocal. They do not fit exactly with fluid or solid. We have bronchial breathing, flatness and increased whispered voice, all in favor of solidified lung. We have diminished tactile fremitus, which is in favor of fluid or high diaphragm with the spleen or the liver sucked up into that area. That on the whole seems to me the more likely, that is, the subdiaphragmatic organs pushed up into the chest, but that does not account for the bronchial breathing. I do not account for that. It might be due to this subdiaphragmatic mass.

8. They evidently think the heart is pulled or pushed or drawn over to the right by something, and we need very much to know what that is. So far I have no idea.

9. The absence of pulsation in the dorsalis pedis arteries does not mean that they are obstructed. We often cannot feel them in old people. We do not need to suppose any local disease.

10. The fact that there are hemorrhages in the fundi is of course an important point.



11. Colon bacillus in the urine culture does not mean much in a case like this. We get a good many of those cultures.

12. The blood shows a moderate presumably secondary anemia, though there is no marked achromia.

13. The basal metabolic rate, minus 26, obliges us to consider myxedema seriously, though in a person as near death as this there might be a good many other things that would produce some lowering.

14. We have no good reason to suspect brain tumor. There has not been much to suggest it anywhere.

15. Eighty cubic centimeters is very little pleural fluid if they took all they could get. It is not nearly so much as we should expect.

16. The red count is a million more than last time. It makes us believe that one of the counts is wrong. But the latter might have been due to surface cyanosis and not a typical red count at all.

#### Differential Diagnosis

I am much in the dark. The x-ray is our chief evidence. We have a lowered basal metabolism and other points in the history that go perfectly well with myxedema. Could she have died of myxedema? I never knew of anyone's dying of myxedema. Those that have been nearest to death were cases with a very severe secondary anemia. If she had myxedema I do not think it is important in relation to the cause of death. She died I think of something that affected her chest, especially her left chest, and that has to do with her heart's being over on the right. What can that be? Can it be pleurisy? Why not?

Students: She had no temperature—no pain—no friction rub.

Dr. Cabot: The chief point is that nobody ever died of pleurisy. We know she died. Therefore she did not die of pleurisy as anything important in her case. The other points against it are also perfectly good. She had no fever. The fluid would have been larger in amount. There certainly would have been more than eighty cubic centimeters. What else could it be?

A Student: Aneurysm.

Dr. Cabot: That I suppose must be thought of. What else?

A Student: Arteriosclerotic heart disease with passive congestion.

Dr. Cabot: That would not account for displacement of the heart.

A Student: Lung abscess.

Dr. Cabot: That is a possibility. The difficulty is that we have no fever, we have no characteristic sputum, and lung abscess does not displace the heart.

A Student: Tuberculosis.

Dr. Cabot: She is obese and sixty-five. Those two points are pretty strong against tuberculosis, but they do not exclude it. She may have had tuberculosis, but I do not see how she could have had it in a form that would displace the heart. When it displaces the heart it is on the side toward which the heart goes, unless the heart is displaced by tuberculous pneumothorax. Then it would go over to the other side. But we have no evidence of pneumothorax so far as I see. That sharp border of the x-ray shadow is not like a fluid level. It is not horizontal. Neither does it slope up to the upper corner. That is not the usual shape for a fluid level. Going back to tuberculosis, if she had tuberculosis on the right side where the heart is pulled over as by adhesions, it ought to show there. If she had it on the left side it would be at the base of the lung, a rare place. She had no fever, no

sputum, and she died. I do not believe it is tuberculosis. What else could it be?

A Student: Something in that left upper quadrant in the abdomen pushing her heart over.

Dr. Cabot: I thought of that at first. But we have nothing to show where the diaphragm is on the left. It is not a clear outline for a high diaphragm. What could we have in that region which would push the diaphragm up and displace the heart that much? It could be an enormous spleen. But if it were an enlarged spleen it would be down to the umbilicus. Or could it be a kidney? Yes, as far as I know. Then it would have to be malignant disease. If it were malignant disease it might not show in the urine. It certainly does not show. The common tumor of the kidney, hypernephroma, ordinarily has metastases before death. In this case we had an x-ray of the skull as well as the rest and we should expect to find some of those metastases. Then I have never known death from tumor of the kidney without a great deal more anemia than this. My difficulty therefore in supposing something below the diaphragm is that I cannot see what it could be. I do not see how it could be spleen or kidney or any other organ. Disease in the intestine could not do it without more functional disturbance.

A Student: How about infarct of the lung?

Dr. Cabot: Infarction of the lung of course has to have a cause, and we generally have some hint of that cause. It usually comes from heart disease. We have no evidence of that. She has a hypertension, but very little to convince us that she has back pressure and chronic passive congestion such as you get with infarction of the lung.

Could it be a massive collapse of the left lung? No. The heart is going the wrong way.

A Student: Syphilis of the lung.

Dr. Cabot: We have never made the diagnosis right in this hospital.

A Student: How about parasitic infection?

Dr. Cabot: We do not know where she lived. It might have been that if she lived in South America.

Miss Painter: She was born in Massachusetts and had lived here most of the time.

Dr. Cabot: That is a good point against parasitic infection. I do not think we need to consider that.

So I come down to malignant disease, epithelioma or endothelioma of the right pleura. I do not know how to exclude that. It is true that that usually gives bloody fluid in the tap, but not always. I remember several cases where I myself tapped and got clear fluid. I cannot rule it out. The possibility of something in the glands of the chest must be remembered, as the cyanosis of the upper part of the body certainly suggests pressure on the venous trunks and the cardiac displacement could come from compressed bronchus from metastasis or enlarged glands.

A Student: Could a malignant tumor of the pleura account for all the various symptoms and signs that you referred to a little while ago in connection with myxedema?

Dr. Cabot: I do not believe it could. I think we have to make a separate diagnosis.

A Student: What is the frequency of such metastasis? Is it common in the local glands or in the thyroid?

Dr. Cabot: I never heard of it in the thyroid. Certainly most of the metastases from the lung or pleura are local, regional.

A Student: What happens to the metabolic rate in malignancy?

Dr. Cabot: Except in leukemia it is low ordinarily. But I never knew it to be so low as minus twenty-six.

A Student: Might not the palpable mass in the liver be metastasis?

Dr. Cabot: Yes, perfectly well. It is drawn in a suggestive way in the diagram.

A Student: Was there any sediment test on the chest fluid?

Dr. Cabot: Have we all the data?

Miss Painter: The record breaks off unfinished.

Dr. Tracy B. Mallory: The findings were those of a transudate rather than an exudate.

Dr. Cabot: To sum up, I see three factors,—certainly two, and I believe three. (1) I believe she died of malignant disease in the chest starting either in the pleura or in the lung, I do not know which, with metastatic glands accounting for cyanosis in the upper part of the body. (2) Hypertension, which could not be accounted for by this. It might be attributed to weakened heart and this strikingly low metabolic rate, which I do not know how to account for unless by (3) myxedema. I should say we have evidence of three factors, two of which had nothing to do with her death and one of which was the central cause.

A Student: Isn't it possible that the hypertension was a mistake? The second record is 145/100, which is a good deal less than 195.

Dr. Cabot: I do not know any special reason to suspect that it is a mistake. You often get as much variation as that near the end of life. The second one was presumably at the end of life. Have we the dates of these blood pressures?

Miss Painter: On May 13 it was 195/110. On the next day it was 145/100. On the 16th it was 180/114.

Dr. Cabot: I think we have to say it was hypertension.

Interpretation of x-ray: Probably fluid in the left lung field. Possibly a mediastinal mass.

Clinical Diagnosis (From Hospital Record)

Myxedema.

Hydrothorax.

Cardiac failure.

Dr. Richard C. Cabot's Diagnosis

Malignant disease primary in the lung or pleura, with metastatic glands.

Hypertension.

Myxedema.

DR. TRACY B. MALLORY

Anatomic Diagnosis

1. Primary disease.

Myxedema.

Arteriosclerosis.

2. Secondary or terminal lesions.

Arteriosclerotic heart disease.

Hypertrophy and dilatation of the heart.

Hydropericardium.

Hydrothorax (bilateral).

Arteriosclerotic nephritis (benign type).

Dr. Mallory: I can confirm two diagnoses in this case, but not the third. The patient did have myxedema. The total weight of the thyroid gland was six grams, as against a normal of between 25 and 30. It consisted almost purely of scar tissue in which only very rare parenchymal cells could be identified. She had an extreme degree of arteriosclerosis, and I think the other findings are all secondary to that.

The chest contained over three liters of fluid, approximately 1000 cubic centimeters of fluid in each of the pleural cavities, and a little over 1000 in the pericardium. In view of the x-ray findings much of this must have accumulated very rapidly in the last few hours of life. The lungs were almost completely atelectatic as a result of pressure from the large amount of fluid.

The heart was much enlarged, weighing 550

grams. There was marked sclerosis of the coronary arteries, without however any marked narrowing of their lumen. The splenic artery showed an extreme tortuosity, the type of arteriosclerotic change that is properly described as a cirroid aneurysm.

The kidneys showed a slight degree of vascular nephritis, which is a common finding in cases with long-standing hypertension.

A Student: How about the liver and gall-bladder?

Dr. Mallory: They were quite negative except for slight passive congestion.

Dr. Cabot: What clinical diagnosis was made?

Dr. Mallory: Myxedema and cardiac failure. The fluid in the pericardium was never suspected.

A Student: Where did the fluid come from?

Dr. Cabot: It was dropsical.

I think they knew in the wards a good many things they did not tell us. There is nothing in the record to suggest cardiac failure. We got no idea of cardiac failure or of dropsy anywhere. I think the heart must have shown evidence of weakness which we did not get in the record.

I was certainly thrown off when they got only 80 cubic centimeters of fluid out of 1000 cubic centimeters actually there. Although we made a clean miss of diagnosis, I do not know how to blame myself or you for the mistake.

Was the heart displaced?

Dr. Mallory: No, I do not think it was. The dullness was due to that big pericardium without much question, and the signs in the lung were due, I suppose, to atelectasis. I think the death was immediately due to asphyxia from insufficiently aerated lung.

Dr. Cabot: This is a very rare kind of death. Ordinarily we take suffocating chest fluid out. Why they did not do it here I do not know.

## GENERAL GLANDULAR ENLARGEMENT LASTING THIRTY YEARS OR MORE

(Case 14421, Case Records of the Massachusetts General Hospital, from New Eng. Jour. of Med., of Dec. 6, 1928, p. 1167.)

### CASE HISTORY

An American stationary fireman forty-three years old entered September 12 through the Emergency Ward for study of upper abdominal pain and enlarged glands. He was semistuporous and very irritable.

Ever since he was a small child he had had enlarged glands in his neck and axillae. They did not change from childhood until after he was grown up. Then at times they increased, occasionally reaching the size of a large walnut and remaining so for a few days, then going down again and not troubling him for months. He had been in fairly good health until September 1, although for several years he had had epigastric distress and eructations of gas after heavy meals. Seven months before admission the inguinal glands became enlarged after some hard lifting. These glands at first were tender for a day or two. The glands in the neck and axillae had never been tender. In May his feet and ankles began to swell during the day, reaching two or three times their normal size after he had been on his feet for a long time but returning to normal overnight. At this time there was more marked enlargement of the inguinal glands. Under treatment by a physician the edema disappeared. He had urinated once or twice a night since that time. The night of September 1 after eating a few pieces of chocolate candy he was suddenly seized with severe colicky epi-



gastric pain which lasted for over an hour and gradually turned into a gnawing dull ache which kept him awake all night and for the five following nights. After this attack he ate very little food because it seemed to cause gas and increase the discomfort. Soda gave no relief. The pain came in waves. When he had attacks of sharp pain it seemed to run around to the lumbosacral region. Four weeks before admission he had two or three attacks of shooting and darting pain all through his legs.

His bowels had always been constipated. He had slight dyspnea and palpitation on exertion. For a year he had occasionally urinated at night. There was some question as to girdle and shooting pains. Ten years before admission he weighed 215 pounds. He thought he had lost some weight in the past six months.

His mother, who died of cancer of the breast, had some "heart failure." His four children had enlarged glands, not so marked as his own.

Clinical examination showed a man with obvious loss of weight and marked pallor, cooperative but drowsy. Moderate pyorrhea. Nasal septum deviated to the left. Left submaxillary and supraclavicular and right cervical glands enlarged, measuring one-half to three centimeters. In both axillae and groins were glands the size of a peach stone, the inguinals firm, all others moderately soft. Marked flaring of the lower costal margins. Harrison's groove. Diaphragmatic excursion limited. Inspiratory wheeze on the left, front and back. Apex impulse of the heart not seen or felt. No enlargement to percussion except slight increase in supracardiac dullness to the left. (Total 6.5 centimeters.) Pulse and artery walls normal. Blood pressure 115/70 to 96/65. Abdomen slightly distended, with tympany in the center and shifting dullness in the flanks. No fluid wave made out. Veins prominent over the upper abdomen. Liver dullness increased downward to five centimeters below the costal margin. Edge not felt. In the left upper quadrant a mass, probably the spleen, descended five centimeters below the costal margin on inspiration. Right pupil greater than left; both regular and reacted normally. Fundi: discs slightly pale, no exudate or hemorrhage. Genitals, extremities and reflexes normal.

Urine: 30 to 55 ounces, red at three of five examinations, specific gravity 1.020 to 1.030, a slight trace of albumin once, bile twice, rare to occasional leukocytes at three of five sediment examinations. Blood: 3,600 to 8,400 leukocytes, 61 to 100 per cent polymorphonuclears, hemoglobin 75 to 45 per cent, reds 4,500,000 to 3,250,000, moderate to marked achromia, moderate to slight poikilocytosis in all of five smears, anisocytosis in the last two, platelets always reduced. In one smear several of the very pale red cells showed rings in centers made up of very small granules, possibly artefacts or Cabot's rings. Two Hinton tests negative. Non-protein nitrogen 27 milligrams. Icteric index September 13, 3, October 5, 40, October 7, 20. Stools negative.

Temperature 96.8° by mouth to 103°. Pulse 80 to 140. Respirations 20 to 44.

X-ray showed the hilus shadows markedly enlarged in size. There was a lobulated mass in this region. The interlobar septum was visible on the right. There was fine mottled dullness throughout both lung fields. The changes were most marked in the upper lobe. The pelvis and lumbosacral spine showed no abnormalities. Re-examination October 9 showed no definite change since the previous observation.

September 17 a gland was removed from the neck for examination. September 19 x-ray treatment was begun.

The patient had some pain. From September 15 to 19 he had no movement of the bowels. The tem-

perature was 101° to 103°. There were medium rales at both bases with diminished breath and voice sounds and with a questionable friction rub below the angle of the right scapula. The patient grew rapidly weaker, thinner and paler and dozed much of the time. The glands diminished slightly in size. The mass in the right upper quadrant grew much smaller. He had no appetite and took only milk and a few crackers. His mouth was dry, his tongue shiny and stiff. October 6 there were numerous fine to medium rales in both backs and a few coarse crackles at the left base. Fluid persisted in the abdomen. The glands diminished markedly in size. October 6 the spleen could not be felt. The leukocyte count was 6,000. The blood contained no lymphocytes. He continued to fail rapidly. Rales increased in both sides of the chest, more marked on the right. From October 4 to 10 the temperature was never below 100.7° rectal or above 102°. The pulse was 100 to 140, the respiratory rate 23 to 40. There was moderate pitting edema of the feet. October 10 he died.

The following discussions of this case were given before the Phoenix Clinical Club at their luncheon meeting on Dec. 9, 1929:—

#### DR. FRED G. HOLMES

The enlargement of the lymph nodes of the neck and axilla from early childhood may have been part of childhood rickets and have little bearing on the case. The whole picture changed some seven months or more previous to his death when the chain of symptoms surrounding the lymph nodes came to the fore.

Tuberculosis of the lymph nodes in a man of 43 years with the course as shown in this case may be excluded at once.

The differential diagnosis would seem to lie between Hodgkin's disease, pseudoleukemia and lymphosarcoma. In the study of this case, we are in the position of the clinicians handling it; we will probably need the findings on the gland removed from the neck for a definite diagnosis.

We may, however, venture some likely guesses. Hodgkin's is much more likely to occur at an earlier age than in this case, whereas pseudoleukemia is likely to occur at this age, while lymphosarcoma occurs most commonly between 25 and 55 years. The blood picture would fit better with Hodgkin's disease or lymphosarcoma than pseudoleukemia, as, in the latter, there is usually an increase in the relative lymphocyte count even though the total leukocyte count may not be elevated, while here we have almost a complete absence of lymphocytes. The remissions in the size of the lymph nodes and remissions in the symptoms are quite characteristic of Hodgkin's disease. It would appear from the description that the glands involved are a little more numerous and there is hardly enough periglandular infiltration of surrounding tissues to indicate lymphosarcoma.

This would appear to favor the diagnosis of Hodgkin's or pseudoleukemia. The anemia, enlargement of the liver and spleen, edema and ascites, temperature, pains probably due to pressure of the enlarged lymph nodes, respiratory symptoms due to enlarged glands, are all symptoms which might be found under certain circumstances in cases of Hodgkin's, pseudoleukemia or lymphosarcoma.

The diminution in size of the glands under x-ray therapy would occur with either condition, although lymphosarcoma shows the most marked reduction, the glands melting away and the patient soon following. It seems the weight of the evidence here is in favor of Hodgkin's disease, considering the blood

picture, the glands involved, and the remission in the disease.

He may have had a terminal pneumonia.

#### DR. ORVILLE H. BROWN

An analysis of the signs and symptoms of this case are as follows: Male; age 43; fireman of stationary engine. As a small child he had enlarged lymph nodes in the neck and axillae; at times they would increase to the size of a walnut for a few days, then recede. For several years before admission he had had epigastric disturbances and complained of gas after eating. Seven months before admission inguinal glands enlarged. Four months before admission the feet began to swell. Eleven days before admission he had severe colic and epigastric pain after eating chocolates; a dull ache lasted five days. Shooting pains developed at times in his legs. He had had dyspnea and palpitation on exertion. He has always been constipated. He had lost 25 pounds in weight in the last 24 years up to one year ago and thinks he has lost since. His four children all have enlarged lymph nodes.

Examination shows obvious loss of weight; marked pallor; drowsiness; pyorrhea; deviated septum; lymph nodes of neck measuring one-half to three cm. in diameter; those in the axillae and groins are as large as peach stones. Inspiratory wheezes exist in the left lung. The abdomen is distended and shows dullness in the flanks. The sides of the abdomen are prominent. The liver dullness is increased 5 cm. downward. The spleen is evidently enlarged five cm. below the costal margin. The right pupil is larger than the left. The following were laboratory findings: Bile in urine; low leucocyte count in blood; marked increase in per cent of polys; anemia; achromia; poikilocytosis; anisocytosis; reduced platelets; icteric index increased. Temperature, pulse and respiration were variable; lobulated masses were in the mediastinum; increased shadows existed in the hyla. X-ray treatments were given. Obstipation developed in hospital. Patient grew worse in every way, although the nodes diminished in size. Fluid persisted in the abdomen. On October 6th there were no lymphocytes in the blood. Rales were in both chests. Pitting edema of the feet existed at times.

The signs and symptoms of this case point conclusively to and can be explained by pathology in the lymphatic system. There had been lymph node enlargement since childhood. During adulthood the glands had swollen and receded. Just how often this occurred is not recorded. It is a particularly interesting point in the history and should have received more investigation.

The first question to answer in this case is in regard to the enlargement of the lymph nodes which existed in childhood. It is well to know in this connection that his four children had lymph node enlargement at the time of his acute illness. Lymph node enlargement is not ordinarily a familial disease.

The fact that the lymph nodes of the axillae were enlarged in this case means more than had only those of the cervical region been enlarged. Cervical lymph nodes are commonly enlarged from infections of nose, throat and mouth.

Lymph node enlargement in childhood may come from about the same set of causes as lymph node enlargement in later life. Therefore it is necessary to discuss here the various causes of lymph node enlargement.

The knowledge of lymph node disease is chaotic. There are, however, certain more or less definite classifications such as Hodgkin's disease, status lymphaticus, glandular fever or mononucleosis, sim-

ple adenitis, tuberculous adenitis, syphilitic adenitis, Gaucher's disease and indefinite classifications variously known as granuloma, lymphogranuloma, lymphoma, lymphoblastoma, lymphosarcoma, aleukemia, lymphatic leukemia, etc.

There are a few points in the physiology of the lymphatic system which are of particular interest.

Rous has shown that, at least in the dog, 150 to 200 per cent of the lymphocytes in the blood stream at any one time are discharged from the thoracic duct in twenty-four hours. The lymphocyte is apparently an "end cell." It has been definitely shown that the lymphocytes play an important part in immune reactions to certain types of infection, such as tuberculosis, cancer and syphilis. Lymphotoxic disease such as typhoid, tuberculosis and Hodgkin's disease, are notably diseases of youth. Lymph tissue is more prominent, and seems to play a greater part, in the life of youth than of the adult. It tends to atrophy with age.

An unexplained and yet interesting phenomenon is that the male is far more susceptible than the female to most of the diseases which affect the lymphatic tissues.

The structure of the normal lymph node should be known in order to understand the diseased lymph node. It is usually spherical to oval and shaped like a bean. It has a convex surface. The blood supply enters through indentations known as the hila. The nodes have: (1) A capsule, mainly connective tissue; (2) trabeculae with lymph sinuses extending from the capsule into the medulla, where they anastomose and continue to the hila; (3) lymphocytes in the cortex in rounded masses or follicles; (4) lymphocytes in the medulla in elongated masses or lymph cords; (5) a fine framework of reticular tissue supporting the entire structure; and (6) lymph vessels leading from the capsule and entering at the hila.

Hodgkin's disease is probably the outstanding disease of the lymphatic system. It occurs twice as often in the male as in the female. It is a disease primarily of youth although cases are on record of the sixth decade. After the third decade, however, the chances of having Hodgkin's disease rapidly diminish. The greatest number of cases occur between the ages of fifteen and twenty-five. There is relatively little proven of the etiology of Hodgkin's disease. A number of workers have isolated diphtheroid bacilli pleomorphic in character, from numerous cases. The organism has been isolated also from other diseases. In a few instances in animals the injection of cultures of this organism produced lymph node enlargement. This organism is not accepted as yet as the etiologic agent. There is a general feeling that Hodgkin's disease is a result of infection the nature of which is yet to be discovered. The pathology of the lymph nodes in Hodgkin's disease is apparently definite. The characteristics of the node of Hodgkin's are as follows: (1) The capsule is thickened; (2) there is proliferation of the reticulo-endothelial cells; (3) the trabeculae have disappeared; (4) there is a hyperplasia of the lymphatic tissue especially in the medulla; (5) the cortex and the medulla both become over filled with lymphocyte, plasma, eosinophile, cosmophile, epitheloid and multinuclear cells. (The multinuclear giant cells are known as the Dorothy Reed cells and are the characteristic cells of Hodgkin's disease); (6) the lymph channels of the nodes are filled with cells and are therefore practically obstructed; and (7) the reticular connective tissue is hypertrophied. The nodes do not caseate. They may be either soft or hard. There are usually one or more groups enlarged and they get very large. The disease may occur in any node or group of nodes within the body. It may be on one side or it may be on both sides.



It may be in limited areas or general. The respiration, heart and other important functions may be seriously interfered with through pressure. The course of the disease is invariably progressive. Death may ensue in six to ten months or even sooner. It is rarely longer than three to four years. A rare case or two has lasted eight years. The treatment seems to be of little avail but a few cases have been benefited by rational, radical measures, such as elimination of all foci of infection and extensive x-ray therapy.

Status lymphaticus is instability of the lymphoid tissue, in which the tonsils, Peyer's patches, the surrounding follicles and the Malpighian bodies of the spleen are hyperplastic; the lymph nodes also may be palpably enlarged. The thymus is invariably enlarged. The figure of the affected individual is characteristic; the muscular system is well developed; the skin is delicate in texture, clear and pink; the male is female in configuration; axillary hair is thin; the female type of pubic hair exists and all in all the body is gracefully constructed.

Mononucleosis is an acute condition of childhood, in which the cervical nodes are considerably enlarged for ten days to two weeks or even longer. Recovery takes place in a short time.

Simple adenitis of the lymph nodes may be acute or chronic—usually regional from drainage of infected areas. It usually comes from a discoverable etiologic factor. In the chronic cases there is a chronic cause and the adenitis may be more general.

Tuberculous adenitis is comparable to simple adenitis. The nodes which drain areas affected with tuberculosis may be greatly enlarged and the affected nodes are prone to caseate. Ordinarily surface nodes fuse together making a cold abscess and perhaps a draining sinus. The pathology of tuberculosis of the lymph nodes is the same as the pathology of tuberculosis elsewhere except as modified by the structure of the nodes.

Syphilitic adenitis of the lymph nodes is common in syphilis and occurs in all stages of the infection. It has a tendency to become chronic, lasting a number of months or years and usually ends in a fibrosis or atrophy of the nodes. The nodes are usually small except those draining the area bearing the chancre.

Gummata may affect lymph nodes and cause numerous enlargements, but ordinarily this occurs in but a few nodes. We know syphilis to be a chronic disease and one which is transmitted from parents to children.

Gaucher's disease is primarily of the spleen—a familial splenomegaly in which several children of one family usually are affected. The lymph nodes show a variable amount of involvement though generally not more than palpable. The spleen is usually much enlarged, although it maintains its regular shape and normal appearance, often weighing as much as seven pounds. The liver is generally enlarged, showing a marked increase in interstitial connective tissue. This disease occurs more commonly in the female than in the male. It usually occurs in the sisters of one family and of one generation. There is no instance on record of transmission from parent to children. Leukopenia develops as an early persistent factor. Hemorrhages of the skin and yellowish discoloration are common.

The illy defined conditions variously known as lymphoblastic leukemia, lymphatic leukemia, pseudoleukemia, lymphoblastic aleukemia, lymphosarcoma, lymphoma, benign lymphoma and malignant neoplasms are poorly understood; they seem to be related and yet extreme examples of one or another of the classifications give evidence of definite entities.

Dr. Nellis B. Foster describes a type of lymph node enlargement under the head of lymphoblastic aleukemia and leukemia. This is a progressive lymph node enlargement with hyperplasia of lymphatic tissue with or without a leukemic blood picture. It seems to be closely related to Hodgkin's disease. There is a tendency for a general lymph node enlargement. Lymphocytes of the small type are lacking in the glandular section. There is an extensive proliferation of lymphoblasts without differentiation; the activity of the nodes is due to the complete infiltration and the filling of the spaces and a thinning of the reticulum. The blood shows a marked reduction of small lymphocytes in the aleukemia form. There is no increase of the large mononuclears. In certain cases the aleukemic type may develop into the leukemic type.

Numerous writers have used the term lymphosarcoma. Virchow originally applied this term to Hodgkin's disease and to pseudoleukemia. Kundrat used the term to designate a type of disease closely simulating sarcoma of other organs. There is a considerable percentage of men who consider it related to Hodgkin's disease. It does not start in a single node but in a group of them. It has a tendency to invade important structures and even metastasize through the blood stream. The new growth consists of reticular tissue and lymphoid cells usually of the large type. The cells may infiltrate surrounding tissue but unlike sarcoma there is no destruction of the invaded tissues. The symptoms depend upon the location of the disease. In certain cases a leukemic blood picture has developed during the course of the disease. The disease is uniformly fatal, usually in less time than Hodgkin's disease.

Benign lymphoma was described by Senn as "a tumor formed of lymphoid tissue produced by a matrix of lymphoblasts." These are usually single and of more pathological interest than clinical. They last a long time.

Malignant neoplasm may arise from lymph nodes. They may be fibrosarcoma or of the round cell variety. The growth and development and metastases are not unlike sarcoma arising in other organs but are in contrast to the group of lymph nodes described as lymphosarcoma according to Foster. Some authors find it difficult to distinguish between this type of growth and the lymphosarcoma and Hodgkin's disease.

The case we have for study does not fit accurately into any of the diagnostic classifications which we have presented. We have here a man who for thirty years had lymph node enlargement. The facts about Hodgkin's disease practically rule this case out of the diagnosis, unless the Hodgkin's disease came on top of a chronic lymph node enlargement from other cause.

The diagnosis of Hodgkin's disease could only be made by the histological picture of a slightly enlarged node. The latter stage of the case might fit into the classification of Hodgkin's disease. The glands, however, are not as large as ordinarily occur in Hodgkin's disease.

I think we may safely say that the case does not belong in the classifications of tuberculosis or syphilis or mononucleosis; nor does it seem to be Gaucher's disease, notwithstanding the enlarged liver and spleen.

Probably it is not a malignant neoplasm according to the definition of Foster. It probably is not a lymphosarcoma according to the definition of Kundrat.

It seems to fall fairly well into the classification of lymphoblastic aleukemia or pseudoleukemia. The fact that there were few or no lymphocytes in the blood stream suggest total or nearly total destruc-

tion of the lymphocyte producing tissues of the body.

The diagnosis then in this case appears to be lymphoblastic aleukemia, or lymphoblastoma or pseudoleukemia,—chronic for many years with recent acute exacerbation; enlargement of the liver and spleen associated with the lymphoblastoma; edema of the legs—from pressure exerted by the enlarged nodes; gastric disturbances—also secondary to pressure; cardiac dilation; dyspnea from heart strain and from mediastinal tumor pressure; pyorrhea; deflected septum of the nose; asthmatic condition of the left lung secondary to pressure; ascites; inequality of the pupils from pressure; lymphopenia; reduced platelets and anemia as changes of blood forming organs; and obstipation also secondary to pressure from the increase in size of the lymphatic tissues.

The following discussion was given before the Yavapai County Medical Society and Medical Officers of Fort Whipple, at their meeting of December 10, 1929:—

DR. G. O. BASSETT

This is a case marked essentially by two factors, a moderately severe anemia and a generalized glandular enlargement. He dies of terminal pneumonia after a month's rather acute illness. The majority of cases of Hodgkin's disease are prolonged over a period of months rather than weeks.

Let us for a moment go over the blood picture again. Let me show you just how difficult it is; even though we can narrow the condition down to the relatively small group of diseases included in the generalized lymph adenomata pseudoleukemias and lymphosarcomas. The blood picture of Hodgkin's or pseudoleukemia shows a relative leukocytosis, sometimes as high as 30,000 or more, which might be confused with the picture of leukemia. In this case it is never higher than 8,400; polys from 61 to 100 per cent, which is even more confusing in that lymphocytes are not mentioned. In fact, in the last report, no lymphocytes were found in a white count of 6,000. In Hodgkin's disease it is not unusual to find the leukocyte count around normal, although it may go up relatively high, but there is a general tendency for lymphocytes to be present and to increase. There is no eosinophilia and that, as acknowledged by all authorities, is one of the few characteristic features of Hodgkin's. Platelets in this case show nothing unusual,—in Hodgkin's they usually increase. We have to rule out Hodgkin's disease unless we fall back on the possibility that this is an atypical case.

The group of diseases of more malignant nature, classified under the heading of lymphosarcomas, fit this case more accurately in some respects than does Hodgkin's. Most writers state that lymphosarcoma is a more fulminating type of Hodgkin's disease and shows less change from the normal blood picture than does true Hodgkin's. The blood picture may be absolutely blank. The tendency in all malignancies is to show, terminally, some leukocytosis. We have in lymphosarcoma, as in all malignant conditions, a relative anemia which gradually increases, which is true in this case. Eosinophilia and increased platelets are not necessary to point to lymphosarcoma.

The general features point more definitely to lymphosarcoma than to Hodgkin's disease. In the first place, it is a rather fulminating thing and he was sick only about a month. The man is cachectic, which is very apt to occur in all malignancies. The history tells us there was fluid in the abdomen, edema of the feet, and possibly other places. Although it is possible in the last stages of Hodgkin's to have fluid in the extremities, it is more likely to

appear in malignant conditions, especially lymphosarcoma.

X-ray of chest shows a large mass involving the mediastinal structures. That x-ray is very interesting. We had, of course, to deal primarily with tuberculous involvement of the glands in childhood. It is always probable later on that tuberculosis may be a factor in any condition that develops. The x-ray reading, "mottled dulness of both upper lobes," probably means mottled appearance of the lungs and dulness on percussion. Lymphosarcoma has a habit of pushing out into the lung and could give a picture somewhat resembling this. Gastrointestinal symptoms we think are due to pressure and lymph node enlargement. The symptoms, all the way through, could be covered by a diagnosis of generalized adenomatous condition of this man's body, enlarged lymph glands which are a process of the rapidly developing lymphosarcoma.

Our diagnosis is lymphosarcoma, although it could easily be Hodgkin's disease; the possibility of tuberculosis as a contributing factor can not be ruled out; and terminal pneumonia.

The following discussions of this case were given at the Clinico-Pathological Conference at the Massachusetts General Hospital (see above journal):—

RICHARD C. CABOT, M.D.

#### Notes on The History

1. This is a very unusual history, if true. One sees plenty of people who have enlarged glands, but not for many years like this with retention of very fair health. I do not remember any case exactly like this and I can make no special conclusion from that statement. They do not sound like leukemia or Hodgkin's or syphilis or tuberculosis, the ordinary four cases of enlarged glands.

2. The pain was peristaltic presumably.

3. I am very much in the dark. Epigastric pain of course is ordinarily due to gall-stones or peptic ulcer or simple things like constipation, but the rest of the symptoms do not back up any of these causes and so far I have nothing of importance to say.

#### Notes on the Physical Examination

1. The pain in his legs made them think of the lightning pains of tabes. Tabes is a cause, though not a common cause, of epigastric pain. But they do not seem to be clear on that point in his history.

2. Three centimeters diameter means a sizable gland. Half a centimeter is a size that half the normal people have in neck, axillae and groin, but three centimeters is something. So far the enlarged glands are the essential lesion that we have.

3. There is ascites. The prominent veins make us wonder whether cirrhosis of the liver or some other less common form of portal stasis is the cause of this ascites.

So far we have enlarged glands, big spleen, fluid in the abdomen, enlarged veins in the epigastrium, perhaps enlarged liver.

4. I have never seen 100 per cent of polynuclears in any blood. I do not believe it. But of course they get up into the nineties quite often. This blood shows secondary anemia with polynuclear leukocytosis; it is not characteristic of any blood disease; it is consistent with Hodgkin's, consistent with a syphilis or with a cirrhosis of the liver.

5. Only one of the x-ray plates, the earliest, is a good plate according to my standards. I suppose as he got sicker it was harder to take them. It certainly looks as if the masses around the hilus of the lung were larger than they ought to be and as if there was more than normal spotting throughout both lungs. There are no sizable nodules such



as we get in metastatic malignant disease. I do not see much difference between September 12 and October 8, but one cannot be sure about the shadows because everything is so dim.

We have here, then, something that can perfectly well be Hodgkin's (lymphoma), but we are not forced to it in any way. It is not yet characteristic or clear.

6. Presumably when the gland was taken out they found out what the diagnosis was, but they do not tell us. When we have a superficial gland there is no use waiting; we can have an antemortem examination.

7. They no longer have any doubt about the fluid in the abdomen on October 6. They seemed a little doubtful about it before.

8. They are very definite in the statement "no lymphocytes". I wish we had the slide.

A Student: Wouldn't that be consistent with x-ray treatment?

Dr. Cabot: I have never seen a blood that contained nothing but polynuclears. X-ray treatment in blood diseases, especially leukemia, hits abnormal cells like the myelocyte very specifically, but in a case like this I do not know of any specific effects of x-ray treatment on the blood.

#### Differential Diagnosis

We have to find the cause of death of a man who was sick in this hospital for a month, who had been known to have enlarged glands for a very long time, but who had been acutely sick for only twelve days before he came here,—an illness of about forty days in all. The essential facts are (a) enlarged glands which go down under observation during the course of a fever; (b) a big spleen which also went down presumably for the same reason, whatever that is; (c) continuous ascites which did not change; (d) masses judged by the radiologist to be abnormal at the roots of the lungs; and (e) a secondary anemia. Now what can do that?

I do not know any variety of sepsis that can run that length of time with no acute lesion showing and no emboli or heart lesion to make us think it localized there. I speak of sepsis because it is the commonest cause of enlarged glands. I do not think it probable in this case. If we consider his enlarged glands, spleen and liver and ascites, sepsis will not account for it. Sepsis comes in, if at all, as a terminal complication.

Can we say syphilis? I think not. The glands alone and the spleen could be due to syphilis, but the course is not like any syphilis that I know of. People do not die of syphilis unless it hits some particular organ in a way that we have no evidence of here. The same can be said of tuberculosis.

I see no plausible diagnosis except malignant lymphoma or Hodgkin's disease; I mean a neoplasm starting in the lymph tissues in various parts of the body. Just where it is in the abdomen I do not know. We can easily suppose that it is in the root of the mesentery so as to impede circulation and produce ascites. It might be in the liver too, but as to that we can only speculate. Apparently it is in the root glands of the lungs. Now lymphoma has no characteristic blood. It has often been said that it has, but anybody who studies it will conclude that there is no characteristic blood of lymphoma. It often produces long periods of fever such as we have here, and in many cases we find an infection post mortem and think the fever due to that. The high percentage of polynuclears we expect in sepsis. Still "100 per cent" makes us think of something more than infection. I can make no other diagnosis than lymphoma or lymphoblastoma (=Hodgkin's, malignant lymphoma, etc.)

A Student: Do you think the glands in childhood were due to the Hodgkin's?

Dr. Cabot: I do not know what else to think. But there are quite a number of cases on record in which glands have remained stationary and symptomless for a long time and then have begun to produce symptoms.

A Student: Is there any record of basal metabolism?

Dr. Cabot: There is no record.

A Student: How about his abdominal masses?

Dr. Cabot: The pain which he had in the beginning sounded peristaltic. Of course if he had lymphoma, it could perfectly well be in the intestine. It is one of the common places for lymphoma. Or even if it is outside the gut it can interfere enough to account for pain. If the pain is not from lymphomatous masses in relation to the intestine, I do not know what it is.

A Student: Could this be aleukemic leukemia?

Dr. Cabot: I should have said something about the bone marrow. We do not feel comfortable about making a diagnosis of neoplastic bone marrow involvement when we have 100 per cent polynuclears. That he should be putting out polynuclears with a marked involvement of the bone marrow would be very unusual. "Aleukemic leukemia" means myeloblastoma or lymphoblastoma of the marrow without any circulatory metastasis. I like those positive terms better than the negative one. I would rather state in our name for the disease the thing we know, which is the marrow lesions on the basis of their histology. I have given the chief points against that, namely, the presence of marrow cells and the exclusion of everything else in the blood.

A Student: Do you attach any importance to the fact that his children have enlarged glands?

Dr. Cabot: I do not know what importance to attach to it. Lymphoma is not hereditary so far as I know.

A Student: Can Gaucher's disease be ruled out?

Dr. Cabot: No, I do not know that it can. But the majority of cases have a much enlarged spleen.

A Student: How about gastric carcinoma, from the history of pain and the secondary anemia?

Dr. Cabot: I think that is rather little to support that diagnosis. We should have more evidence before thinking of gastric cancer, especially as he has so much else that can cause his secondary anemia.

A Student: Isn't the duration rather long for Hodgkin's?

Dr. Cabot: I don't think there is any duration that can be stated for Hodgkin's. I have known very long cases. I have known short ones.

A Student: What is the significance of the red-colored urine?

Dr. Cabot: Nothing, I think; high-colored, concentrated urine. It shows a gravity of 1.030 once. "Red" means high-colored. People use colors very loosely in talking about patients, as "green sickness" for chlorosis, that sickness which is never green. I think this is simply an exaggeration.

A Student: What were the lung symptoms at the end?

Dr. Cabot: "The rales increased in both sides of the chest, more so on the right." The respiratory rate rose. That is a good point to bring out. There may well be a bronchopneumonia. We do not need to suppose it, but it is quite possible.

A Student: Could sarcoma do this?

Dr. Cabot: You mean lymphosarcoma? You get out of my depth there. If you mean that it starts from the lymph glands themselves and especially from the immature cells, it seems to me lymphoblastoma is the better name.

A Student: How about the shooting pain in the leg?

Dr. Cabot: I don't know. I don't think that can be due to this disease.

A Student: How do you account for glands decreasing in size?

Dr. Cabot: X-ray treatment accounts for it. Perhaps also he had some terminal infection. Any terminal infection that we can name tends to make the glands and spleen decrease in size.

A Student: I was referring to the glands diminishing in his youth.

Dr. Cabot: I do not think I have anything to say about that.

A Student: What was the significance of the shiny stiff tongue?

Dr. Cabot: Fever, that is all.

A Student: Do not the glands in Hodgkin's disease recede at times?

Dr. Cabot: Yes, they do, especially under treatment.

A Student: How do you explain the tenderness of the inguinal glands?

Dr. Cabot: I do not explain it.

A Student: Doesn't the terminal blood picture of Hodgkin's disease reach 100 per cent polynuclears?

Dr. Cabot: I have never known it before.

**Clinical Diagnosis (from Hospital Record)**

Lymphoblastoma, Hodgkin's disease.

Terminal infection (bronchopneumonia?)

DR. TRACY B. MALLORY

Anatomic Diagnoses

Lymphoblastoma (Hodgkin's type.)

Bronchopneumonia.

The anatomical findings were those of a typical Hodgkin's disease. The lymph nodes throughout the body were enlarged, to notable size in the inguinal region and also in the root of the mesentery. There were tumor nodules scattered throughout the liver. The spleen was the typical "porphyry" spleen of this disease. There were innumerable nodules scattered throughout the lungs, some of them miliary in size, others reaching nearly a centimeter in diameter, also Hodgkin's disease, although in gross very closely simulating tuberculosis. The bone marrow was entirely negative.

There was a pneumonia in the right base, evidently present for a considerable time, since already a moderate degree of organization had occurred. Organization is of course a possible outcome of any pneumonia which fails to resolve, and although relatively uncommon we have seen several cases recently. The other organs were essentially negative except for acute tubular degeneration in the kidneys.

A Student: Was there any obstruction in the vena cava?

Dr. Mallory: I think perhaps, from the external pressure of these nodes.

A Student: Was the lung parenchyma involved?

Dr. Mallory: To a considerable extent. That is not very common, but it is quite possible. I have seen one case where there was excessive pulmonary involvement. The patient had been in a tuberculosis sanatorium for three years. He had also a vertebral lesion which was diagnosed by x-ray as Pott's disease. The x-ray pictures of the two conditions may be identical I believe.

A Student: Did you diagnose this disease from the biopsy material?

Dr. Mallory: Yes; it was a very typical Hodgkin's disease.

A Student: What other general disease can you diagnose from histologic sections of lymph nodes?

Dr. Mallory: Generalized tuberculosis of the lymph nodes. That is about all that I feel very sure of.

A Student: Do you use the term "aleukemic leukemia?"

Dr. Mallory: Not yet.

Dr. Cabot: In relation to this term, it doesn't make any great difference what we call things, but

I think it is sensible to name a disease by what is there rather than by what is not there,—non-leukemic leukemia,—whereas we have something definite to say, namely, bone marrow growth—myeloblastoma.

## CASE REPORT

### (Liver Injury following Antiluetic Treatment.)

IRVING BANCROFT, M. D.,  
Los Angeles, Calif.

A well developed and nourished girl, 21 years old in March, 1928, developed a typical primary sore on the vaginal mucous membrane, but never at any time had any secondary symptoms as treatment was begun soon after the appearance of the primary sore. Between March and November, 1928, she took 21 doses of Neosalvarsan, 6 grams at each dose and 21 doses of mercury salicylate, one grain at each dose. She presented no unusual reactions to the treatment except that after the first dose of each series, she felt sick. After the initial dose of the first two courses, she had general pains, backache and felt ill for a short time. After the first dose of the third course which was given after four weeks' vacation from all treatment, she became definitely sick with symptoms of anorexia, chills, fever, backache, nausea, epigastric pains and tenderness. In about three weeks she became jaundiced.

On December 11, 1928, she was still deeply jaundiced, nauseated and could eat little food. She was also definitely tender over the liver. The urine, at this time, contained no albumin, but much bile pigment. Sodium thiosulphate was given intravenously and sodium phosphate by mouth at this time, but she continued to grow worse.

On December 21, 1928, she entered the Los Angeles General Hospital. The examination at admission showed the heart and lungs to be negative, Wassermann negative, leucocytes 14,000, with 16 per cent lymphocytes and 84 per cent polymorphonuclears. The urine showed no albumen but there were a few hyaline casts and a few cells stained with bile. There was a definite tenderness over the right upper quadrant of the abdomen. The spleen was not palpable, the reflexes were normal. The blood coagulation time was 38 minutes, bleeding time 50 minutes. The urine functional test showed the appearance time to be 30 minutes and during the first half hour 45 per cent was excreted and during the second half hour 8 per cent was excreted.

On December 22, 1928, she was nauseated all the time and vomited blood at times. She had become deeply jaundiced. The blood chemistry at this time was as follows: non protein nitrogen 42 mg., uric acid 5 mg., calcium 8.2 mg. per 100 c.c. of blood. The icterus index was 40; initial hemolysis 36 per cent, complete hemolysis. 24 per cent. Death took place on December 31, 1928.

The autopsy (by Dr. Wagner) showed almost complete necrosis of the liver cells and with considerable infiltration of lymphoid and plasma cells. The kidney showed cloudy swelling and degeneration but no inflammatory infiltration.

There are several interesting points about this case.

1. The facts herein stated do not support the theory that hepatitis occurs only when the kidney does not function properly.

2. There is sometimes no warning of impending liver injury.

3. Injury occurred after the first dose which was given after four weeks vacation and hence the cumulative action of the remedies are hardly likely to be causable factors.



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## JOINT SOCIETY AND HOSPITAL MEETINGS IN PHOENIX

The medical organizations in Maricopa County are attempting to solve the problem of too frequent medical meetings by combining the county society meetings with the hospital staff conferences. This type of combined meeting was discussed at the Conference of Secretaries of the American Medical Association at their meeting in November, 1928. It was subsequently proposed to the Maricopa County Medical Society and the staffs of St. Joseph's Hospital and the Good Samaritan Hospital, at Phoenix. The personnel of the three organizations being nearly identical, conditions seemed to be ideal for this arrangement. Having been approved by all organizations, the plan was inaugurated in January of this year and has, so far, been very successful. The attendance is better than ever before, and the programs have been very interesting. The former schedule of meetings included two meetings a month for the County Society and one meeting a month for each staff. The Society continues to meet semi-monthly, meeting with St. Joseph's Hospital Staff on the second Monday evening and with the Good Samaritan Hospital Staff on the fourth Monday evening. One organization occupies the first hour; then adjourning while the second organization's officers take charge and hold their meeting; the personnel of the two organizations being the same, the only interruption being to change the presiding officers. The Staff Conference follows the recognized procedure of discussing cases treated in the hospital, while the Society portion of the meeting usually includes papers or address by some invited guest. This diversity of program, with the semi-monthly instead of weekly meetings, has served to increase the interest and attendance.

## CHANGE DATES FOR ARIZONA STATE MEETING

After the dates of the Arizona State Medical Association meeting had been set for April 17, 18 and 19, and the Public Health Association meeting for April 15 and 16, objection was voiced to these dates as coming immediately preceding Easter. The Program Committee decided to change the dates to a week later, and were fortunate in securing the cooperation of all invited guests for the change in dates. The Public Health Association also changed their dates to April 22 and 23. The full program of both these meetings will be found elsewhere in this issue.

## CHARLES H. SAWYER

Dr. Charles H. Sawyer, for many years in the Indian Service, with location at San Carlos, and of recent years practicing in Globe, Ariz., died on February 22nd. He was a member of the Gila County Medical Society, the Arizona State Medical Association and a Fellow of the American Medical Association.

Dr. Sawyer was born in 1857, and graduated from the Western Reserve University at Cleveland in 1880.

**EASTMAN MEDICAL FILMS:**—The American College of Surgeons is sponsoring the production of medical and surgical pictures, the technical work being done by the Eastman Kodak Company. These films can be either rented or purchased from the Eastman Teaching Films, Inc., Rochester, N. Y. They are made in two sizes,—the 16 mm. film which is the size for use with the Eastman projector, and the standard movie film of 35 mm.

**NEW SOUTHERN PACIFIC HOSPITAL IN TUCSON:**—Dr. W. B. Coffey, Chief Surgeon of the Southern Pacific, visited Tucson recently in the interest of the proposed new hospital to be built there by the Southern Pacific Railroad. This will be a notable addition to the group of industrial hospitals in Arizona, and to the hospital facilities in Tucson. When completed, it will place Tucson in the forefront of the cities of the Southwest, so far as hospital facilities are concerned.

# The Arizona State Medical Association

## THIRTY NINTH ANNUAL MEETING

### Phoenix, Arizona, April 24, 25 and 26

Headquarters—Hotel Westward Ho

#### ANNOUNCEMENTS

Registration headquarters and all scientific and business meetings will be held in the Hotel Westward Ho. Every member, visitor and guest is requested to register promptly on arrival.

Scientific sessions will be held in the ballroom of the hotel and will begin promptly on time.

No address or paper before the Association, except those of invited guests, shall occupy more than twenty minutes. The opening discussions are limited to five minutes and general discussions to three minutes each. No one shall speak more than twice on the same subject.

Papers read before the scientific sessions shall become the property of the Association and shall be deposited with the secretary for publication in the official organ of the Association (Southwestern Medicine.)

Special announcements will be sent out about the social entertainments.

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#### PROGRAM OF SCIENTIFIC SESSIONS

THURSDAY, 10:00 A. M.

##### Address of Welcome:

HON. JOHN C. PHILLIPS, Governor of Arizona.

##### Introduction of President-Elect.

##### President's Address:

JOSEPH M. GREER, Phoenix.

C. C. TIFFIN - - - - - Seattle, Wash.

"Surgical Treatment of Goitre."

Discussion opened by

E. PAYNE PALMER, Phoenix.

#### Symposium on Industrial Medicine and Surgery

JOHN E. BACON and WM. B. WATTS, Jr. - Miami  
"Arthritis and Its Relation to Industrial Medicine."

JOHN W. FLINN - - - - - Prescott  
"Pneumoconiosis and Silicosis."

A. C. KINGSLEY - - - - - Phoenix  
"Back Injuries."

CHAS. N. PLOUSSARD - - - - - Phoenix  
"Inflctions of the Fingers and Hand."

WM. LYLE BELL - - - - - Oakland, Cal.  
"Organic Internal Splinting of the Fractured or Detached Olecranon."

JOHN TAHENEY - - - - - Phoenix

"The Relation of the Medical Fraternity to the State Industrial Commission."

Discussion on industrial papers opened by

JAMES R. MOORE, Jerome.

R. D. KENNEDY, Globe.

S. H. WATSON, Tucson.

GEORGE A. BRIDGE, Phoenix.

#### Symposium on Chest

FRIDAY, 10:00 A. M.

ALLAN K. KRAUSE, Director, Desert Sanitarium, Tucson.

"Trends in Treatment of Pulmonary Tuberculosis."

C. S. KIBLER and S. H. WATSON - - - Tucson

"Management of Artificial Pneumothorax Patient."

J. L. MCKNIGHT, U. S. Veterans' Hospital, Tucson

"Intestinal Tuberculosis from the Standpoint of the Roentgenologist."

W. R. LEVERTON - - - - - Tucson

"Some Phases of the Heart in Tuberculosis and Other Lung Diseases Including Studies with the Electrocardiogram."

VICTOR RANDOLPH and W. W. WATKINS - Phoenix

"Limitations and Correlated Values of Clinical and X-ray Findings in Chest Diagnosis."

Discussion of papers opened by

E. W. PHILLIPS, Phoenix.

VICTOR RANDOLPH, Phoenix.

FRED G. HOLMES, Phoenix.

H. L. GOS, Phoenix,

O. C. WEST - - - - - Phoenix

"Epidemiological Studies."

C. E. YOUNT - - - - - Prescott

"Hydatiform Mole, with Case Report."

Discussion opened by

FLOYD B. SHARP, Phoenix.

SATURDAY, 10:00 A. M.

CHAS. T. STURGEON - - - - - Los Angeles

"Pulsion Diverticulum of the Esophagus."

F. M. POTTENGER - - - - - Monrovia, Cal.

"The Explanation of Symptoms."

HARRY A. REESE - - - - - Yuma

"Fever."

Discussion opened by

ROBERT S. FLINN, Prescott.

HARRY T. SOUTHWORTH - - - - - Prescott

"Ovarian Hematomas of the Endometrial Type (Chocolate Cysts), with Report of Cases."

Discussion opened by

GEORGE E. GOODRICH, Phoenix.

C. C. TIFFIN - - - - - Seattle, Wash.

"Differential Diagnosis and the Medical Treatment of Goitre."

Discussion opened by

S. I. BLOOMHARDT, Phoenix.

A. C. CARLSON - - - - - Jerome

"Volkman's Ischemic Contracture." (With report of Case and Moving Pictures).

Discussion opened by

EDGAR BROWN, Phoenix, Arizona.



## ARIZONA PUBLIC HEALTH ASSOCIATION

The third annual meeting of the Arizona Public Health Association will be held at the Adams Hotel, Phoenix, Arizona, on Tuesday and Wednesday, April 22 and 23, under the auspices of the State Board of Health. Health officers, city engineers, water works and sewage plant operators, dairy inspectors, public health nurses, and all others actively interested in community health and sanitation are cordially invited to attend this meeting.

Tuesday, April 22  
9:00 a. m.

### GENERAL MEETING

H. T. Southworth, presiding  
Registration and Organization Preliminaries.  
9:30 a. m.: Address of Welcome—F. J. Paddock.  
Local arrangements for meeting—Phoenix Committee.  
Introduction of Registrants.  
State Board of Health Program—R. J. Stroud, M.D.  
Organized Health Administration in Texas—J. C. Anderson, M.D.  
Moving Pictures of Creamery Waste Treatment—Wisconsin Division of Sanitary Engineering. Courtesy of L. F. Warrick.  
Chlorination for Odor Control at Mission Creamery—James Minotto.  
Discussion—G. T. Luippold and N. T. Veatch, Jr.  
10:30 A.M. Visit to Mission Creamery and Waste Disposal Field.

Tuesday, April 22  
2:00 p. m.

Joint Meeting of Health Officers and Dairy Inspectors' Sections.  
Dairying in Southern California—Jay Dutter.  
Dairying in Foreign Lands—C. O. Hagen.  
The Present Status of the Dairy Industry in Sonora—Dairy Commissioner of Sonora.  
Enforcement of Dairy Regulations in Utah—Edward Southwick.  
Dairy Conditions in Northern California—Sam H. Greene.  
Pasteurization—George W. Putnam.

### WATER AND SEWAGE

2:00 p. m.

N. T. Veatch, Jr., presiding  
Planning and Zoning their Relationship to Sanitation—W. J. Jamieson.  
Selection of Deep Well Turbine Pumps—Richard Bennett. Discussion—H. Schwalen, Roland Taylor, and F. R. MacPherson.  
Superior Water Works Improvements—M. A. Moody.  
Method of Maintenance Used by Phoenix Water Department—R. T. Gardner. Discussion—F. C. Lynes and A. J. Kline.  
Controlling Algae Growth at Winslow—R. C. Kline. Discussion—Richard Bennett and Jane H. Ryder.  
Swimming Pool Sanitation—G. T. Luippold. Discussion—D. W. Swihart.  
Classification of Algae Found in Reservoirs—H. L. Shantz.

### EVENING

7:00 p. m. Dinner—H. T. Southworth, M.D., presiding.

Public Health Organizations—Homer N. Calver.  
Talk on Health Policies—Honorable John C. Phillips.  
Annual Meeting of Arizona Public Health Association.

Wednesday, April 23

9:00 a. m.

### HEALTH OFFICERS' SECTION

F. T. Foard, M.D., presiding  
Diphtheria Toxin-antitoxin—O. C. West, M.D.  
Discussion—R. B. Durfee, M.D.

Health Work in Pima County Rural Schools—Helen Boccock, R. N.

Health Work in the El Paso Public and Private Schools—P. R. Outlaw, M. D.

Methods of Cooperation Between Individual Counties and the State Health Nurses—Anna H. Osback, R. N.

Control of Meningitis in Gila County—C. E. Irvin, M.D. Discussion—J. W. Morris, M.D., N. D. Brayton, M.D., and H. A. Spencer, M.D., U.S.P.H.S.

The Benefit of the County Health Unit—V. G. Presson, M.D.

### DAIRY INSPECTORS' SECTION

T. P. Morgan, presiding

The Success of the Standard Milk Ordinance in Tucson—J. C. Hicks, D.V.M.

Progress of Standard Milk Ordinance—Milk Specialist, U.S.P.H.S.

The Dairy Industry in Yuma County—Homer T. Kryger.

Certified Milk—J. P. Bushon, M.D.

Enforcement of Standard Ordinance, Section by Section.

### WATER AND SEWAGE SECTION

Chester A. Smith, presiding

Construction of Sewers—Chester A. Smith. Discussion—George Grove.

Disposal of Sewage from Institutions—Chester Cohen. Discussion—M. R. Tillotson and L. J. Mahoney.

Aeration of Sewage—N. T. Veatch Jr.

Indianapolis Sewage Treatment Plant—Dario Travaini.

Vacuum Degassification and Circulation of Sludge—S. A. Adams. Discussion—Chester Cohen.

Construction and Operation of Small Sewage Treatment Plants.—H. B. Hommon.

Informal luncheon for Water and Sewage Section—Adams Hotel.

Wednesday, April 23

2:30 p. m.

### HEALTH OFFICERS' SECTION

R. J. Stroud, M. D., presiding

Round Table Discussion of Public Health Problems in Arizona.

Incidence of Dysentery in the Salt River Valley—Harry Carson, M.D.

Communicable Disease Control and Quarantine in Arizona.—O. C. West, M.D.

### DAIRY INSPECTORS' SECTION

Field Trip to Dairies and Creameries.

This trip will include a visit to raw and pasteurized milk plants, an ice cream factory, and condensery.

### WATER AND SEWAGE SECTION

H. B. Hommon, presiding

Round Table Discussion.

Sterilization of Water Mains—G. T. Luippold and A. J. Kline.

Operation of Sewage Treatment Plants—D. Travaini. Discussion—Hillyard Hall.

Garbage Collection and Disposal—M. R. Tillotson. Discussion—Chester A. Smith and Chester Cohen.

6:30 p. m. Dinner—R. N. Looney, M.D., presiding.  
Undulant Fever—J. C. Geiger, M.D., speaker.

The Southern Pacific Health Exhibition car will be in Phoenix during the meeting. Definite arrangement for the time of their demonstration will be made later. This car has been sent to Phoenix through the courtesy of Dr. W. B. Coffey, Chief Surgeon for the Southern Pacific Company.

# SPECIFIC THERAPY OF ERYSIPELAS



## ERYSIPELAS ANTITOXIN LILLY $\approx$ A90

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**A**DEQUATE doses of Erysipelas Streptococcus Antitoxin, Lilly, when given early usually control the immediate attack. In the favorable responses there is prompt relief from the toxemia, improvement in temperature and pulse rate with arrest and fading of the lesion.

Erysipelas Streptococcus Antitoxin, Lilly, is a purified, concentrated globulin of high antitoxic potency. The dosage volume is small; the protein and solids content low. Supplied by the drug trade in convenient syringe containers of 5000 units.

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## PERSONALS

## LOCATION FOR DOCTOR IN NEW MEXICO:

—Some of the citizens of San Jon in New Mexico are interesting in securing a physician for that location. This is a farming country and San Jon is the center of the district which is said to be forty miles or more square. Any doctor interested should write Mrs. J. D. Griffiths, San Jon, N. M.

DR. M. B. CIRLIN, of Chicago, Ill., has been visiting friends in Phoenix during February.

DR. FRANKLIN H. MARTIN, of Chicago, Director General of the American College of Surgeons, who is spending several weeks at the Biltmore Hotel in Phoenix, recently entertained Arizona members of the College at a dinner. Most of the College fellows were present, coming from all parts of the state.

DRS. J. J. BEATTY AND W. R. LEVERTON, of Tucson, announce the opening of offices in the Consolidated National Bank Building, with practice limited to the diagnosis and treatment of the heart and lungs including x-ray and electrocardiographic studies.

DR. J. C. GEIGER, of the United States Public Health Service, San Francisco, was a visitor in Maricopa County, early in March. He will be in this vicinity frequently during the spring, as the Public Health Service is conducting an extensive investigation into malta fever and abortus infections.

## EL PASO COUNTY MEDICAL SOCIETY

Meeting Feb. 10, 1930

Meeting called to order by the president, Dr. Paul Gallagher, at 8 p. m. There were 50 members and 5 visitors present.

The minutes of the previous meeting were read and approved.

The president explained to the Society that the instructions received at the previous meeting which provided for paid advertisements in all three local papers relative to Periodic Health Examinations, as well as news insertion of a synopsis of that meeting had not been carried out by the officers of the Society because, after consultation with advertising experts, it was deemed that the cost of such advertisements would be out of proportion to the benefit derived. Dr. Waite then made a motion, seconded by Dr. R. B. Homan, that the whole matter be dropped. Motion carried.

The paper of the evening was read by DR. GEORGE TURNER. It was entitled "Preliminary Report of Experimental Studies in Deproteinizing Blood Serums." He stated that the chemical method of precipitating protein from solution by the use of salts of heavy metals and by the use of alkaloidal reagents is a familiar study in biochemistry. His method, apparently untried before, consists of the precipitation of the protein by electrolysis. Pure gold as the anodal plate is the only metal with which he has been successful so far. A platinum plate is used as the cathode. The passage of a weak direct current through the serum causes a

Founded 1896 by Dr. Hubert Work



WOODCROFT HOSPITAL, PUEBLO, COLORADO

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Superintendent



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Kansas City, Missouri

# HEADQUARTERS---



for the  
**Convention**  
of the Arizona  
State Medical  
Association  
at Phoenix  
April 24, 25, 26  
*at*

## Westward Ho

You can make your home here at the Westward Ho while in Phoenix attending the Convention. Completely appointed for your convenience. Your early reservation will assure you of accommodations to your complete satisfaction.

Special rates are available to the members in attendance at this convention.

*Reasonable Dining Room Prices*

**Geo. W. Lindholm**  
President and Managing Director



precipitation of its protein, both primary and secondary, either collecting at the bottom of the cell or tube, or accumulatinig on the anode, depending on whether the serum is diluted or concentrated. The remaining protein free solution is slightly alkaline. By rendering it slightly acid, it is possible to precipitate the antitoxic element which can then be redissolved in a minimum amount of very slightly alkalized physiological salt solution. The practical applications and the conclusions at which he arrived are:

1. The deproteinizing of blood serum by electrolysis is practical and not difficult.
2. It separates and removes the total protein from the toxic or antitoxic elements of the serum.
3. The antitoxic elements act in their specific manner more precisely after the protein is removed.
4. The antitoxic element with the protein removed keeps better and tolerates a higher temperature.
5. The removal of the protein from the serum by electrolysis makes the complement fixation test more reliable.
6. It makes the laboratory detection of tuberculosis possible from the blood serum.
7. It removes the objectionable and, at times, dangerous element from antitoxic sera.

In the discussion, DR. STEPHEN SCHUSTER asked how much activity must be present to be able to detect tuberculosis from tests of the blood serum. He also asked if this test would give any idea as to the location and amount of involvement.

DR. LEIGH thought Dr. Turner was deserving of a great deal of credit for his work. It recalled to his mind the work done in the isolation of insulin. He thought that with this method it might ultimately be possible to permit the availability of antitoxin

in a dry form and thus extend its use to more remote localities.

DR. RALPH HOMAN thought that this test would be of special benefit in the early diagnosis of tuberculosis. He cited one case which Dr. Turner reported positive when clinically it was thought to be negative for tuberculosis. Subsequent developments proved Dr. Turner to be right.

DR. LAWS complimented Dr. Turner and stated that the extent of the practical applications of his experiments could not be fully realized as yet. As to the complement fixation test in tuberculosis, if it turned out as satisfactory as Dr. Turner thought it would, it would be revolutionary, as heretofore it had not been of much practical value.

DR. RIGNEY thought that the practical applications of these experiments would be as beneficial from a therapeutic standpoint as from a diagnostic one, as the removal of the protein from serums would remove the danger of anaphylaxis and serum sickness.

DR. TURNER, in closing, stated that he hoped and thought that this method of deproteinizing serum would prove beneficial both from a therapeutic and a diagnostic standpoint. He pointed out that the harmful reactions now occasionally met with in the administration of antitoxins are not produced by the antitoxin element, but by the protein in the serum. In answering Dr. Schuster, he stated that he had tested the serum from a number of patients in Dr. R. B. Homan's Sanatorium, both tuberculous and non-tuberculous, and that all cases that had a temperature from tuberculosis were indicated by the test and vice versa. That one case that was thought to be tuberculous, clinically, but had a negative test, went on to autopsy and was proven non-tuberculous. As to the location of the lesion, this could not be

# DOCTOR

The  
**Dallas Southern Clinical Society**  
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In Dallas, April 14, 15, 16, 17, and 18. There will be Lectures, Clinics and Post Graduate Work, covering Medicine, Surgery and the Specialties—this will be done in the forenoon.

Each afternoon will be devoted to General Meetings when men of national reputation will address you. Motion pictures will be shown, among them being the famous Canti (Cancer) film.

**Remember the date, April 14-15-16-17-18**  
**HEADQUARTERS, BAKER HOTEL**

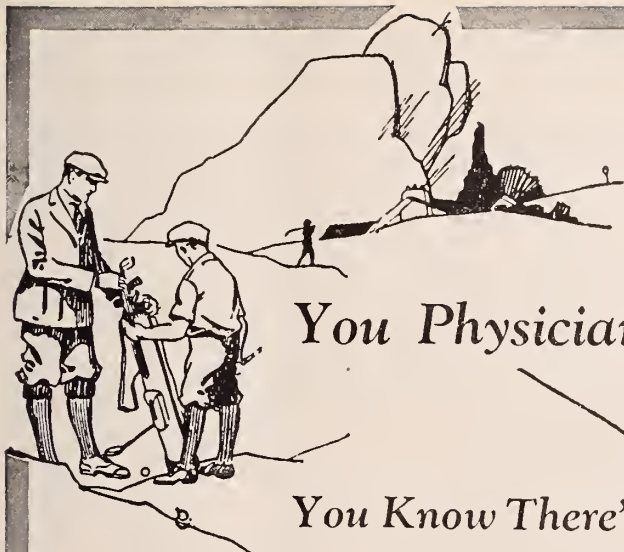
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Dallas Southern Clinical Society, 710 Medical Arts Bldg., Dallas  
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ALMOST any player can swing around the course with a single club, dubbing drives, lifting fairway sods and bringing home a century mark or more for the final score. But the finished golfer needs a club for every shot—a studied judgment of approach or putt before the club is selected.

Similarly in artificial infant feeding. For the normal infant, you prefer cow's milk dilutions. For the athreptic or vomiting baby, you choose lactic acid milk. When there is diarrhea or marasmus, you decide upon protein milk. In certain other situations, your judgment is evaporated milk.

Dextri-Maltose is the carbohydrate of your choice for balancing all of the above "strokes" or formulae and aptly may be compared with the nice balance offered the experienced player, by matched clubs.

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PHYSICIANS' BABIES  
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told, and made no difference as far as the test itself was concerned. The hydropenion of the electrolyte is important, for if you swing it to acid, the whole thing will spoil. What the precipitate of antitoxin on the anode consists of is not known, but once the antitoxin is precipitated it loses its properties. He expected to do a lot more work on these experiments.

DR. J. J. GORMAN reported a case of pernicious anemia, detailed account of which will be found published elsewhere in this journal (April issue.)

MR. HOGAN, of the El Paso Times, addressed the Society in regard to a special edition of their paper to appear shortly. He said a committee (apparently himself or his newspaper) were selecting prominent citizens, past, present and future, and inviting them to have their photographs printed in this edition. He assured us that the motive was entirely altruistic and that only those invited would be permitted the privilege of seeing their resemblances that coming morning in print. He wanted the County Society to sanction the participation of those of its members who might be invited. After he had left Dr. Ralph Homan inquired as to what the charges would be for such a privilege. The President informed him that it was \$20.00 per. Dr. Homan then made a motion that Mr. Hodge's proposal be not accepted. Seconded and carried.

The President then informed the Society that the U.S.P.H Service requested that this body endorse House Bill No. 3142 and Senate Bill No. 1195, which is "To Provide for Coordination of Public Health Activities of the Government." Dr. Waite made a motion that this bill be endorsed and that the Secretary be instructed to communicate this endorsement to our Senators and Representatives. Motion seconded and carried.

Dr. Gorman requested that two copies of all papers intended to be read before the State Association must first be presented to the County Society, and that members having such papers get in touch with Dr. Ralph Homan promptly so that they might get on the program early. He called attention to the fact that about forty-seven members have not yet paid their dues and requested that they do so. He announced that dinner would be served at 7 p. m. at Hotel Hussmann on meeting nights to those members who cared to participate. At these dinners matters to be brought up at the meeting could be discussed and thus the business of the meeting expedited.

There being no further business the meeting adjourned at 9:15 p.m.

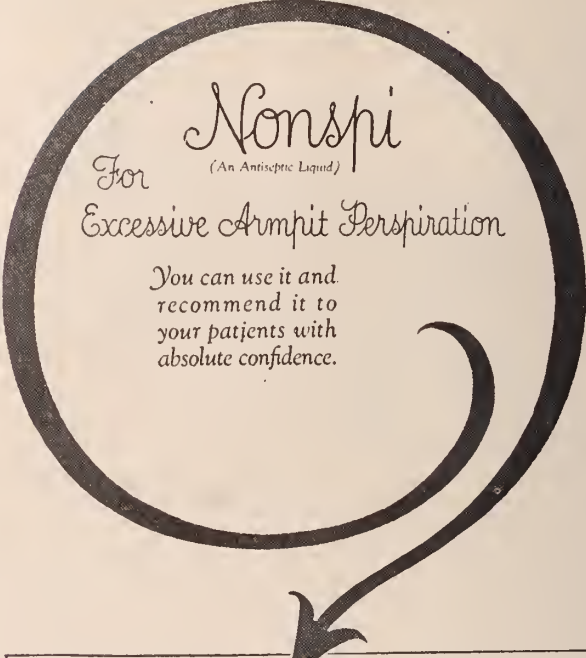
S. H. NEWMAN, M.D.,  
Secretary.

February 24, 1930

Meeting called to order by the president, Dr. Paul Gallagher, at 8 p.m. There were 51 members and two visitors present.

On motion made by Dr. Waite, the reading of the minutes of the previous meeting were dispensed with.

The first paper of the evening was that of DR. F. C. GOODWIN, entitled "Some Foot Problems." In it he pointed out that the weak painful foot is the most common postural condition which is referred to the office. From the history you are usually able to rule out infection. That due to malalignment is characterized by pain in the heels, apex of the inner long arch behind each malleolus with stiffness in the calf muscles. The foot is usually abducted, producing what seems to be a flat foot, but the foot is not flat. The arch can be completely restored if the foot is put in proper alignment. Overweight, long hours of standing, a bunion,



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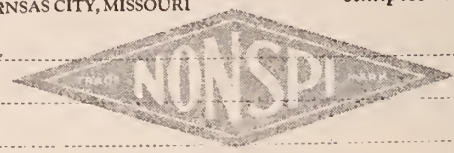
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## *An Effective Ally in the Treatment of Pneumonia*

Anything short of major calibre in a diathermy machine for the treatment of pneumonia will prove disappointing. The Victor Vario-Frequency Diathermy Apparatus is designed and built specifically to the requirements. It has, first, the necessary capacity to create the desired physiological effects within the heaviest part of the body; secondly, a refinement of control and selectivity unprecedented in high frequency apparatus.

In the above illustration the apparatus proper is shown mounted on a floor cabinet, from which it may be lifted and conveniently taken in your auto to the patient's home.

A REPORT from the Department of Physiotherapy of a well-known New York hospital, dealing with diathermy in pneumonia and its sequelae, states as follows:

"As a rule diathermy is indicated in acute pneumonia, especially so when the symptoms are becoming or already are alarming: the temperature is high, the patient is delirious, the pulse is extremely rapid, cyanosis is deep, the respiration rate is high, the breathing is very shallow, and the cough remains unproductive. Not infrequently in a pneumonia case with such alarming symptoms, after a few diathermy treatments an entire change of the picture takes place: cyanosis lessens, respiration becomes deeper, the quality of pulse improves, the rate decreases, the

temperature is lowered, and the cough becomes productive. Auricular fibrillation that develops occasionally in similar pneumonias or other types of pneumonia where the toxemia is great, has been changed to a perfect normal rhythm after a few diathermy treatments."

You will value diathermy as an ally in your battles with pneumonia at this season, aside from the satisfaction derived from having utilized every proved therapeutic measure that present day medical science offers.

A reprint in full of the article above quoted, also reprints of other articles on this subject, will be sent on request.

### GENERAL ELECTRIC X-RAY CORPORATION

*Manufacturers of the Coolidge Tube and complete line of X-Ray Apparatus  
Physical Therapy Apparatus, Electrocardiographs, and other Specialties*

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Los Angeles, Calif.—Medico-Dental Bldg.

Houston—322 Medical Arts Bldg.



deformed toe, or anything which causes the patient to favor one foot or to overwork any group of muscles may be the causative factor. In these cases the first appearance of pain in the foot is at the attachment of the plantar ligament to the os calcis. Then the pain soon begins to appear at the astragalonavicular joint. Then pain soon appears posterior to each malleolus. Pain may appear in the knee joint due to torsion of the tibia and in turn the femur is rotated inward, causing tension on the psoas major muscle which in turn pulls on the lumbar vertebrae, producing low back pain. In the treatment of these conditions, the feet should be strapped with large felt pads, pulling the foot into the corrected position. Repeat once a week. Keep patient active. Use large loose shoe with Thomas heel, which may or may not be elevated. If not markedly improved in three weeks, then a focus of infection should be sought for and corrected if found. Such cases as complain of pain in the course of the vessels to the sole of the foot between the os calcis and medial malleolus.

For the correction of bunions, the Mayo operation should not be performed, as it is a destructive operation and the results are often pitiful. The Silver operation should be the one of choice, as it is corrective and not destructive.

Metatarsalgia is encountered in women in about 95 per cent of the cases. The cause is high heel and tight-fitting, pointed shoe, squeezing the ends of the metatarsals together. To relieve, place a large support or elevation far up under the heads of the metatarsals.

In cases of calcaneovalgus, supply the child with flat, rigid shoes, with the inner side of the heel elevated an eighth of an inch. A large felt pad is applied to the shoe so as to support the inner long arch. A few may need plaster cast.

Fracture of the os calcis with displacement, invariably causes persistent pain and disability. The treatment is triple arthrodesis.

The second paper of the evening was entitled "Public Health with Especial Reference to its Problems and Administration," by SURGEON J. R. HURLEY of the United States Public Health Service. Public health considers both the person and his environment and resolves itself into hygiene and sanitation. It is a purchasable commodity but its cost is so high that public opinion and our legislative bodies are unwilling or unable to provide the price. From fifty cents to a dollar per capita is required for efficient local health administration. Modern civilization is what has rendered public health problems so complex. Four prime considerations are required to produce and insure good public health. These are, an ample supply of safely potable water; adequate, properly designed sewage disposal system; an adequate and efficient system for the disposal of garbage; and a properly organized city health department. Supplementing this, there should be a proper county or district health organization and also a state health organization, assisted when need be by the power of the Federal Government. Man incurs his diseases by direct contact with other persons, from the lower animals, from insects, through foods, through the water, and from the air. Laws or ordinances must be enacted recognizing these dangers to the public health and authorizing the organization of health departments to control them. These laws must also provide certain standards, must provide personnel and money. In most cities the Board of Health is invested with the responsibility of protecting the public health and supervising the health department. The latter should have a full time executive officer, who should be a physician skilled in preventive medicine and hygiene,


and should comprise the following divisions, each with a competent chief in charge: A Division of Communicable Diseases; a Division of Child Hygiene; a Division of Sanitation; a Food Division; a Laboratory Division; a Division of Vital Statistics, and a Division of Publicity and Public Health Organization.

The County or District Health Organizations are not usually so extensive as those existing in larger cities and do not overlap or duplicate the work of the City Health Department. It should be headed by a full time physician.

The State Health Department is organized along lines similar to those described for the municipality. It acts in a supervisory and advisory manner, and, in addition, looks out for large-scale nuisances.

The Federal Government maintains the United

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## Dietetic Flour

Starch-free Diabetic Foods that are appetizing are easily made in the patient's home from Listers Flour. It is self-rising. Ask for nearest depot or order direct.

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Emphasis is laid on outdoor life, to which the enclosed and pleasant garden contributes.

Especial attention is given to occupational therapy.

A dietitian supervises all menus. Terms reasonable.

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Los Angeles References:

Dr. Mary L. Neff, Trinity Hotel

Dr. Samuel D. Ingham, Roosevelt Building

States Public Health Service to handle problems too large for the States to cope with. It was organized in 1798 and has been twice reorganized. It is presided over by a Surgeon General with a commissioned medical corps and other special experts. Its duties are the protection of the United States from the introduction of disease from without and the prevention of the spread of disease in interstate traffic; the suppression of large epidemics; the investigation of those diseases affecting man, and the dissemination of health information. It also supervises as to purity and potency the manufacture of biological products.

Public health nursing is of great importance in public health work. This movement is of comparatively recent origin, but it has been growing steadily and has now received general recognition and is an established and important part of public health work. For a city of 100,000 inhabitants, the following nurses are required:

- 1 nurse for communicable disease control;
- 4 nurses for tuberculosis control;
- 2 nurses for venereal disease control;
- 15 nurses for infant welfare work;
- 8 nurses for school hygiene work. Total of 30 nurses.

The need for sufficient public health nurses is an outstanding problem. There should be upward of 50,000 public health nurses to serve the population of the United States instead of the approximately 12,000 to 15,000 in the field at present. Special schools or special courses in the nurses training schools are absolutely requisite.

DR. McNEIL, in commenting on Dr. Hurley's paper, stated that this was the kind of paper that was too infrequently brought before this Society. We do not always have a clear conception of the duties of the various health organizations and these matters could be clarified by the more frequent presentation of similar papers.

Dr. A. W. Multhauf, who was to have read a paper on "Prostatic Calculi" was unable to be present on account of sickness.

Our president announced that he was in receipt of an anonymous communication relative to advertising by some of our members. He wished it clearly understood that all anonymous letters received by him would be relegated to the wastepaper basket.

There being no further business, the meeting adjourned at 8:45 p.m.

S. H. NEWMAN, M. D.,  
Secretary.

## THE PHYSICIAN'S POLICY IS MEAD'S POLICY

Messrs. Mead Johnson & Company, in addition to producing dependable Infant Diet Materials such as Dextri-Maltose, have for years been rendering physicians distinguished service by rigidly adhering to their well-known policy which is the following:

"Mead's Infant Diet Materials are advertised only to physicians. No feeding directions accompany trade packages. Information in regard to feeding is supplied to the mother by written instructions from her doctor who changes the feedings from time to time to meet the nutritional requirements of the growing infant. Literature is furnished only to physicians."

Every physician would do well to bear in mind that in this commercial age, here is one firm that instead of exploiting the medical profession, lends its powerful influence to promote the best interests of the medical profession it so ably serves.

## CLEVELAND CLINIC FOUNDATION FELLOWSHIPS

The Cleveland Clinic Foundation offers four two-year Fellowships in Medicine beginning on July 15th of each year, to candidates who have had at least one year of hospital intern service. Appointments for the second year depend upon the character of service rendered during the first year and are subject to mutual agreement between the Directors and each Fellow. These Fellowships carry a payment of \$1,200 for the first and \$1,500 for the second year and give the holder the opportunity for an extensive and varied practical service.

A course of Fellowship Lectures extending over two years is given on each Monday evening from September to May inclusive.

A review of the x-ray films of current cases is given one evening each week during the above nine months and the Fellows are expected also to attend the weekly Pathological Conferences and the regular weekly meetings of the Medical Staff, at which various clinical problems are discussed.

Application blanks will be forwarded upon request to the Secretary of the Fellowship Committee, Cleveland Clinic, Cleveland, Ohio.

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.. in concentrated form

COD-LIVER OIL contains more vitamin D than any other natural available product, but always in association with vitamin A and, of course, with the characteristic taste of the oil. Now a synthetic vitamin D preparation is available—one that has only the physiologic effect of this particular vitamin. It is Viosterol in Oil--100 D.

This product has 100 times the vitamin D potency of high-grade cod-liver oil. It is administered by drops instead of by spoonfuls; is bland and tasteless; can be mixed with different foods.

Parke, Davis & Co.'s Viosterol in Oil--100 D is the remedy *par excellence* for rickets. It is a preventive of this condition if given in time to the expectant mother, and to breast or bottle-fed infants.

It will help to check or prevent *dental caries* due to defective calcium metabolism, and has a curative effect in *osteomalacia*.

Its value in *tetany* has been demonstrated, and owing to the stabilizing effect of calcium on the nervous system, it is recommended in *spasmophilia* and *chorea*.

Calcium metabolism is a most favorable



Parke, Davis & Co.'s Viosterol in Oil--100 D is supplied in 5 cc. and 50 cc. packages, with dropper.

factor in the healing of *ulcerous conditions*, and Viosterol stimulates calcium metabolism.

The dose ranges from 10 to 20 drops (3 to 7 minims) a day, or in exceptional cases 25 or possibly 30 drops. Specify on your orders and prescriptions: "Parke, Davis & Co.'s Viosterol in Oil--100 D."

This product has been accepted for inclusion in N. N. R. by the Council on Pharmacy and Chemistry of the A. M. A.

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# Analysis

## Comparative Analysis of S. M. A. and Breast Milk

Chemical and Physical Analysis	S. M. A.	Breast Milk
Fat . . . . .	3.5-3.6%	3.59*
Protein . . . . .	1.3-1.4%	1.23-1.5
Carbohydrate . . . . .	7.3-7.5%	7.57*
Ash . . . . .	0.25-0.30%	0.215-0.226*
pH . . . . .	6.8-7.0	6.97**
Δ . . . . .	0.56-0.61	0.56***
Electrical Conductivity . . . . .	0.0022-0.0024	0.0023***
Specific Gravity . . . . .	1.032	1.032
Caloric Value:		
— per 100 c. c. . . . .	68.0	68.0
— per ounce . . . . .	20.0	20.0

\* Average per cent according to Holt, "American Journal Diseases of Children," Vol. 10, page 239, 1915.

\*\* Davidsohn, H.—Ueber die Reaktion der Frauenmilch, Zeitsch. for Kindern., Vol. 9, 1913, page 15.

\*\*\* Fridenthal, H.—Ueber die Eigenschaften kuenstlicher Milchsera und ueber die Herstellung eines kuenstlichen Menschenmilchersatzes. Zentralb. f. Physiol., Vol. 24, 1910, 687.

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Volume XIV

APRIL, 1930

No. 4

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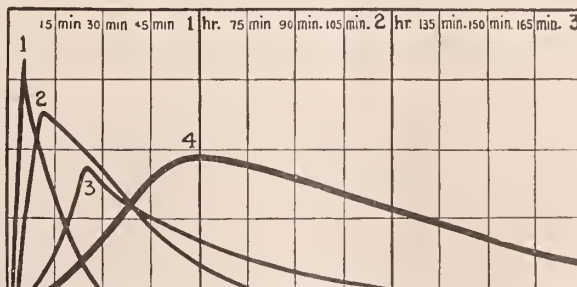
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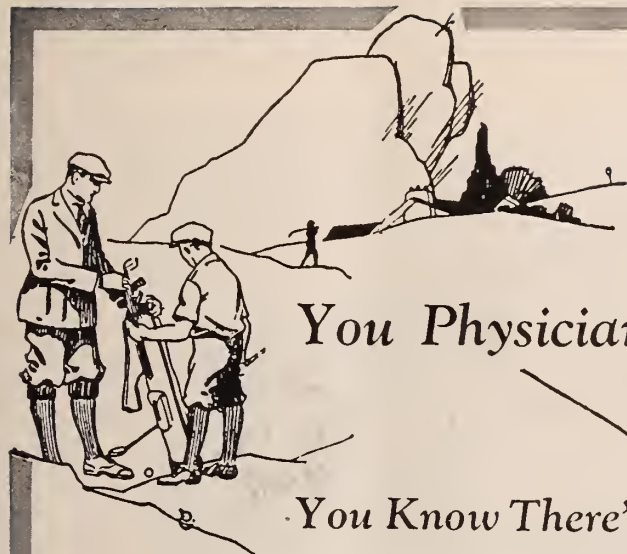
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## ANOMALIES OF THE KIDNEY PELVIS AND UPPER URETER

W. G. SHULTZ, M. D.,  
Tucson, Ariz.

(Read before the Medical and Surgical Association of the Southwest, at the fifteenth annual session, held at Phoenix, Ariz., Nov. 7 to 9, 1929.)

I shall discuss only those anomalies which are produced by aberrant vessels. Their early recognition and conservative surgical relief is most important if we hope to conserve the kidney, and this, therefore, is an appeal to the general practitioner to send us these cases as early as possible. These vessels are known to be present in a very large percentage of patients, Eisendrath and Quain stating as high as twenty-one and twenty per cent.

### OCCURRENCE

This high percentage is easily accounted for if we consider the embryological development of the kidney, which undergoes a most extensive change in position in its upward ascent from the bony pelvis to the upper abdomen. This change must carry with it a corresponding change in blood supply derived from higher and higher sources as the kidney climbs up the ladder of the blood supply.

We therefore find various accessory vessels, consisting of (1) upper polars arising from the main renals; (2) upper polars arising from the aorta; and (3) lower polars from the main renal, the aorta, the common iliac, spermatic, inferior mesenteric, and median sacral arteries. Depending upon their embryological development, there may be as many as one to six renal arteries on one side. Anomalous veins occur less frequently than anomalous arteries but are as important in the production of pathological conditions.

It has been observed that the selection of

the renal artery is largely a matter of chance. A number of the so-called anomalous vessels may be but the retention of a portion of normal vascular relations of the embryo before the ascent of the mesonephros to the renal fossa. There may be multiple renal arteries and veins of every conceivable type of branching, depending upon the selection of the channels from the peri-aortic plexus. (Chas. P. Mathe). The persistence of this early blood supply as seen in kidneys retained in the pelvic position, where the renal artery arises as a branch of the middle sacral, common iliac, or inferior mesenteric, is not uncommon.

### PATHOLOGY

In a large percentage of these cases, the abnormally placed vessel, in itself, produces no pathological condition. Obviously those supplying the upper pole cannot obstruct the ureter and the presence of an anomalous vessel at the lower pole is not necessarily the primary cause of back pressure. The dropping down of a too movable kidney, carrying with it the ureter, causing it to kink over such a vessel, is responsible for the obstruction which creates the pathological condition and symptom complex to be dealt with. Should infection occur in such a kidney, adhesions may occur between the vessels and the S-shaped ureteral kink, which may become permanent and even result in an inflammatory narrowing of the lumen of the ureter itself. I cannot, therefore, too forcefully urge upon you the importance of early recognition, and surgical relief, of these cases, before the resultant stasis has progressed too far, producing advanced hydronephrosis, calculus formation, and finally complete destruction of the kidney. As stated above, there must be factors other than the anomalous vessel to produce pathology,



as these conditions occur far more frequently in normal kidneys than in those showing signs of back pressure. It has long been recognized that no abdominal arteries are so irregular in their distribution, or present so great a variety of anomalies, as those supplying the kidneys. These vessels vary in size from very small diameter to that of the ureter and supply a part of the kidney varying up to as much as one-half.

Undue mobility of the kidney, carrying the ureter down with it, causes it to sag and come in contact with an anomalous vessel, which acts as a fixed support over which it becomes suspended, causing an intermittent, progressive hydronephrosis, infection, inflammatory changes, strictures, calculi, thinning of the tubules of the cortex and medulla of the parenchyma to such an extent that the kidney may be transformed into a mere shell. The predisposing causes of movable kidney are: the peculiar body form, described by Walkow and Delitzin, in which there is deviation in the anatomical configuration of the posterior abdominal walls, with shallow cylindrical or funnel-shaped paravertebral fossae; loss of security of the kidney due to upright posture; laxness of the general and local renal supports; and the peculiar formation of the perirenal fascia in which the lower portion of the renal loge is open, favoring descent.

The active causes of movable kidney are various acute and repeated chronic traumata.

#### SYMPTOMATOLOGY

The symptomatology is variable and depends upon the degree of pathology present.

Pain is always present in some degree. It may be sharp, intense, intermittent, or persistent. It usually commences in the lumbar region or upper abdominal quadrant, on the side involved, and may radiate along the course of the ureter to the labia, testis, or thigh. Standing posture and exercise aggravate it, while horizontal and Trendelenburg positions lessen or relieve it. There is generally a dull ache present at all times after the condition becomes well established. Menstruation and lying on the opposite side usually intensify the pain.

Nausea and vomiting frequently accompany the severe attacks, as well as the dull lumbar pain, and may be accompanied by gas, constipation, hyperacidity and progressive loss of weight.

Insomnia, headache, and varying degrees of nervousness are usually present.

Cases uncomplicated by infection experience few, if any, urinary symptoms. With infection, almost any urological symptom,

such as increased frequency, burning, nycturia, pyuria, and hematuria, may be present. Dietl's crises are familiar to all of you. When patients have developed these urological symptoms to considerable degree, it is, of course, easy to realize that they need a complete and thorough study, but it is most important to get these patients before such is the case. Renal infection in such cases will not respond satisfactorily to the universally recognized measures; viz., irrigations and dilatations, employed for their relief in cases uncomplicated by such an anomalous condition.

#### DIAGNOSIS

There is no method of demonstrating an aberrant vessel or of proving definitely that a given case of hydronephrosis is being produced by one. There are, however, symptom complexes which should cause us to suspect such a condition, and, when presented with movable kidney, intermittent regular attacks of kidney pain and demonstrable ureteral kink in the upper ureter, we should consider an anomalous vessel as being a very probable factor in the production of our patient's infirmity. Examination of the patient while standing may determine the amount of mobility but good plain roentgenograms in the dorsal and standing positions are of more value and also aid in the determining of size and shape, as well as excluding stones and enlargement of other abdominal organs. Cystoscopy is indispensable in these cases. An ordinary ureteral catheter usually encounters definite resistance when it passes the kinked or narrowed upper ureter and, likewise, when withdrawing a bulb catheter, a definite hang is elicited at such a point. It is sometimes impossible to pass a catheter beyond the kink in such a case without first placing the patient in the Trendelenburg position, as was true in one of the cases I am herewith reporting. Pyelography should be employed in all such cases. Upright films, with catheter withdrawn, are very essential in demonstrating kinking and narrowing of the lumen of the ureter suspended over an aberrant vessel. Since surgical intervention is to be considered in all these cases, it is not necessary to add that a complete study of both kidneys should be made, which should include a thorough chemical, bacteriological, and functional study of each. From such a study we are able to determine whether the surgical treatment shall be radical or conservative.

#### TREATMENT

It is, of course, impossible to say that conservative treatment—consisting of wearing a belt, attempts to straighten the kinked ureter by splinting it with a retention catheter, dilatation of the narrowed ureter by

means of bulbs, systematic renal drainage and lavage—ever gives relief in these cases, because, if they are relieved by such measures, we have not proven the existence of an aberrant vessel. These measures should be employed in all such cases presenting themselves early in their course, as well as those who refuse surgical intervention, and, if no relief is obtained, surgery must be resorted to. Hinman and Morrison have demonstrated that hydronephrosis develops more rapidly in the higher obstructions of the ureter; therefore, early operation in such cases is imperative if we hope to save the kidney from total destruction. Surgery in these cases consists of division of the obstructing vessels and connective tissue bands, mechanical straightening of ureteral kinks, or, if the vessel is large and not atrophic, supplying a large portion of the kidney, widening of the ureteropelvic junction, transplantation of the ureter, causing the aberrant vessel to pass on the other side, and, in all cases, fixation of the kidney in place. In most cases, the obstructing vessel may be divided and ligated, as it is often atrophic and enveloped in fibrous tissue. Should the vessel be large and supply a considerable portion of the kidney, we should hesitate to sacrifice it, as Hinman and other workers have proved that there is a complete absence of arterial anastomosis, either intrarenal or extrarenal. This is not true of the venous system, however, and therefore the same caution does not apply to an aberrant vein. Kelly and others have attempted to relieve these cases by simply suspending the kidney, but it has been shown very conclusively that nephropexy alone fails to relieve them, and a second operation has been required, at which time division of the vessel or nephrectomy has been necessary. The narrowed ureter should always be corrected at the time of operation.

### RESULTS

Results depend entirely upon how early these cases are recognized and how skilfully handled. Those patients seen early should be completely relieved, those seen late should also be, because they lose the then offending and destroyed kidney by nephrectomy; and the in-between cases will be materially benefited or not, depending chiefly upon the skill and good judgment of the operator.

### CASE REPORTS

I have two cases to report in which the condition was definitely one of aberrant vessel, one seen early and the other late in the process of development.

Case No. 1. Hospital No. 3486. Mrs. J. C. G., housewife, age 39, reported to me March 4, 1929,

suffering with an attack of severe pain in her right lumbar region and right upper abdominal quadrant. She gave a history of having had these attacks since the birth of her first child, now 18 years of age. She had a great deal of urinary trouble, including urinary infection during the time that she was carrying her second child, now 16 years of age. Following this latter pregnancy, her symptoms became more pronounced and she noted a dull pain in the right lumbar region and right upper abdominal quadrant. This pain was non-radiating in character, and was accentuated by exercise, stooping, and so forth, and, while it was present at all times, she had fairly frequent attacks of a savage colicky nature, Dietl's crisis. The interval of time between these attacks gradually became lengthened until, of recent years, they have been very far apart, perhaps coming on but once a year. These attacks were accompanied by marked nervousness, nausea, vomiting, and some frequency. The right kidney, on palpation, was quite tender, very definitely enlarged and freely movable, dropping below the brim of the bony pelvis. At the first examination, performed March 4, 1929, a No. 6 ureteral catheter passed about two-thirds of the way up the right ureter, where it was obstructed, and I was unable to go beyond this obstruction. At her second cystoscopy, however, performed March 11, 1929, by placing her in a Trendelenburg position, a No. 6 ureteral x-ray catheter passed this obstruction and made a complete loop in the upper third of the ureter before entering the renal pelvis. The left ureter was catheterized with a No. 6 ureteral catheter, without difficulty. Urine from the left kidney was clear and contained no pus or blood; from the right, it was cloudy and contained a large amount of pus in which a mixed infection was found, colon bacilli predominating. Intravenous phthalein appeared from the right kidney in 10 minutes, giving only a trace in 15 minutes. It appeared from the left in 1½ minutes and 45 per cent was excreted in 15 minutes. Pyelogram of the right kidney, taken in upright position, shows a hydronephrotic multilobular kidney in which the secreting tissue has been replaced by cysts, and the complete loop made by the ureteral catheter before entering the renal pelvis, as well as a marked degree of ptosis, the kidney dropping well below the bony pelvis. Nephrectomy was advised and this I did June 29, 1929. At operation, I found a fairly large band of fibrous tissue enclosing an aberrant artery which arose from the aorta to enter the pelvis anteriorly. This was ligated and cut, although it seemed to have completely atrophied. Nephrectomy was performed and recovery was uneventful. This was a case in which the vessel passed anteriorly to the ureter. There was great mobility and rotation of the kidney, the pelvis of which should have slipped over back of the vessel in dropping, but inflammatory adhesions, which had probably occurred early, prevented its doing so. Had this case been properly diagnosed shortly after the birth of her second child, the kidney might easily have been saved.

Case No. 2. Hospital No. 3547. Miss C. L.: Age 18, school girl, referred by Dr. Swackhamer. Reported to me July 22, 1929, complaining of continual dull pain in the right lumbar region, radiating to the right anterior superior spine and occasionally, when more severe, down the right thigh. The pain was accentuated during menstruation periods and by exercise and was not relieved by Trendelenburg or reclining positions. No urinary symptoms, such as frequency, or dysuria, were present. Her symptom complex began 18 months before reporting to me and had been growing steadily worse. After an examination in Colorado about one year



before, she had been advised to have her right kidney removed for a renal tuberculosis. Cystoscopy, July 22, 1929, both ureters easily catheterized with No. 6 catheters. Both urines were clear, containing no pus or blood. Intravenous phthalein appeared from the right in 3 minutes, from the left in 2½ minutes, and in 15 minutes the right excreted 18 per cent while the left excreted 20 per cent for the same interval of time. Pyelogram in upright position on the right side showed a comparatively normal kidney with slight distention of the pelvis and an apparent sharp angulation at the ureteropelvic junction, with narrowing at this point. No ptosis was present, but these findings suggested the possibility of an anomaly here and operation was advised. Her pain was the same except made more severe by pyelography. Operation, July 27, 1929. A small-sized aberrant vessel was found lying in a fibrous band and running from the aorta posteriorly, crossing under the ureteropelvic junction and entering the lower pole of the kidney just below the pelvic junction. This was ligated and cut. It was quite atrophic, being almost a fibrous band. Plastic widening of the ureteropelvic junction was done and the kidney suspended. Recovery was uneventful and a letter received from the girl's mother last week states that she is completely relieved, symptomatically.

Anomalous vessels are present in a very high percentage of cases. They cause no obstructive symptoms and require no treatment in a large number of these. Movable kidney is the primary factor in causing obstructive disease. Upright pyelo-ureterograms are necessary to diagnose the condition. Results from surgical intervention are very excellent when the case is properly diagnosed early in its development and we should, therefore, make every possible effort to recognize these cases early.

## SOLITARY CYSTS OF THE KIDNEY

WILLIAM ROSS JAMIESON, M. D.  
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(Read before the Medical and Surgical Association of the Southwest, at the fifteen annual session, held at Phoenix, Ariz., Nov. 7 to 9, 1929.)

Solitary or benign cysts of the kidney may be divided into two classes: those with clear watery contents, known as serous cysts; and those in which there is an admixture of blood, known as hemorrhagic or hematic cysts.

Large solitary cysts of the kidney are rare, but may be more common than supposed, as they are seldom discovered until their growth makes them apparent or pressure symptoms on neighboring organs manifest themselves. Harpster<sup>1</sup> collected 93 cases from literature and added two of his own. Kairis<sup>2</sup>, up to 1926, had gathered 125 cases. Thompson<sup>3</sup>, in a review of 12,888 autopsy reports, found a record of this condition in only 32 cases. O'Neil,<sup>4</sup> in going through the records of the Massachusetts General Hospital, found but nine cases. No example of this condition had been seen at the Brady Urological Clinic, Johns Hopkins Hospital, until 1926, when Colston<sup>5</sup> reported an unusual combination of solitary

cyst and papillary adenoma in the same kidney.

Of Harpster's cases, forty-one were at the lower pole, eighteen at the upper and seven at the mid-portion of the kidney. The location of the cyst was not mentioned in twenty-nine. Viethen<sup>6</sup>, in 1926, and Ludowics<sup>7</sup>, in 1928, reported a case of large serous cyst occurring in a horseshoe kidney. The affection appears to be more common on the right than the left side.

The condition is more common in women than in men in the proportion of two to one.

Vonnachen and Sprenger<sup>8</sup> state that five cases of simple cyst in children have been culled from literature, dating back as far as 1861, and add a case of their own. The oldest child was eight years and the youngest one year. With regard to the hematic cysts, Manna<sup>9</sup> gives the age range of reported cases as between sixteen and sixty-one.

## ETIOLOGY

Various theories have been advanced to account for the formation of these cysts. According to Virchow, the cysts originate in circumscribed interstitial foci with obstructed urinary canaliculi. Both Albarran and Kuster subscribed to the theory that there is no fundamental difference between the genesis of simple cysts and polycystic kidneys; that both are due to cystic dilatation of dispersed tubuli of the Wolffian body. However, the greater frequency of polycyst in kidneys, the fact that they are usually bilateral, the urinary changes and heredity are against this theory. At present the question has been narrowed down to two hypotheses, retention and congenital disturbance of development. Ruckert declared that "all cysts are caused by inhibition of development in the earlier or later stages of fetal life." Dunger and Lubarsch were equally confident that the changes observed were wholly of an extra-uterine nature. Kampmeier's studies led him to believe that in every normal human being there is a certain period of fetal life in which numerous cystic urinary tubules survive the normal fetal period. If the abnormal growth is confined to one tubule, a solitary cyst results. With the present knowledge of these cases, it is impossible to say that one or the other theory is right, but the consensus of opinion seems to favor the congenital theory.

Offhand, it would seem easy to define a hematic or hemorrhagic cyst as a serous cyst into which blood has extravasated. The theory that an inflammatory process is responsible for hemorrhagic cysts does not hold good, as the histologic findings do not bear it out. That trauma, slight or serious, evident or unobserved, may be the cause, has its advo-

cates. The possibility of a hemorrhagic infarct, the rupture of minute aneurysms or congenital fragility of the blood vessels is open to discussion. Another theory is that hematic cysts may originate in a cavernous angioma, pass through the stage of hemangioma, and become cystic if the contained blood is not too rapidly absorbed. These large collections of blood remain liquid in the center, because they are inclosed in a sort of capsule with a smooth surface. Why an angioma becomes cystic is not explained. Krogius<sup>10</sup> reports a case of hematic cyst in which the sac contained ten liters of thick, chocolate brown, foul smelling fluid, containing pus cells and red blood cells, masses of detritus and cholesterol crystals. Offensive gases were given off. The medial wall of the cyst inclosed a rudimentary kidney connected with a thin ureter.

Renal elements including glomeruli and tubules were found in the cyst wall. The innermost layer was of granulation tissue covered with epithelium. Inflammatory changes were found throughout the cyst wall. He ascribes the condition to faulty development in fetal life between the primitive renal pelvis and the metanephrogenous tissue. Hemorrhage had occurred and the cyst cavity formed. This hypothesis seems to be confirmed by the presence of many vessels in the cyst wall and by the healthy condition of the remaining renal tissue. "Unfortunately, histologic examination gives very little information. In those cases where it was made, the cysts were formed by connective tissue made up of stratified fibrous lamellae with some elastic fibres in the middle of which were veins, arterioles, hemorrhagic foci and sometimes bits of renal substance" (Manna<sup>3</sup>).

According to Young<sup>11</sup>, the serous cyst is lined with a delicate epithelium, either cuboidal or flat. There is no fibrous capsule, the epithelium lying on basement membrane about the same thickness as that of a normal tubule and directly in contact with the parenchyma.

The contained fluid of the simple cyst is yellow in color, alkaline in reaction. Sugar, uric acid, cholesterol crystals, leucin, and sometimes phosphates are found. The albumin and urea are in much greater concentration than in the blood.

In the hematic cysts the wall is always denser than that of the serous cyst, even reaching one centimeter in thickness. The densest part is nearest the kidney substance. There may be small hemorrhages between the layers. Picque, Souligoux and Gouget observed fatal hemorrhages when the clots

were detached during operation. The contents are an important feature of these cysts, consisting of a chocolate colored fluid containing old and recent blood, free and adherent to the wall. Manna states that the reaction is neutral or slightly alkaline. The precipitate obtained with alcohol shows the reaction of mucin, bile and pseudomucin. Cultures are usually sterile.

Wulff is the only observer to report any connection between the cyst and the calices, having seen one case with a pin point opening into the renal pelvis.

#### SYMPTOMS

Abdominal swelling is usually the first thing noticed by the patient. As the tumor increases in size, there are other symptoms caused by the encroachment of the mass on neighboring organs. The commonest of these is pain, either acute or dull and dragging, generally felt in the lumbar region and radiating toward the pelvis and thigh and into the genitals. Incomplete intestinal obstruction will cause colic, vomiting and constipation. Frequency of urination and hematuria are very rare.

#### DIAGNOSIS

The diagnosis of solitary cysts, either simple or hematic, is extremely difficult and rarely made prior to operation. This is due to the absence of characteristic symptoms and also to the fact that practically all of the parenchymatous organs of the abdomen may be the site of conditions simulating this trouble. Mendelsohn states that in 58 cases operated upon, the preoperative diagnosis was correct in four. Harpster, with a larger number of cases, gives seven correct preoperative diagnoses. As there are no characteristic symptoms pointing to the kidney, the diagnosis must be made by exclusion. Inspection shows a mass of varying size occupying one or other upper abdominal quadrant and extending to or beyond the median line. The contents of the cyst are under such tension that it feels like a solid body, although there may be an indefinable something that will convey the idea of fluid to the examining fingers. Felt through the abdomen, the contour is rounded, the surface smooth. As a rule the colon lies in front of the mass, but if the tumor is of sufficient size, it may displace the colon toward the median line or beyond. If the cyst is in the right kidney, it is obscured by the liver, and if this organ is also cystic the diagnosis is impossible. Hydatid cysts of the kidney can only be differentiated by the finding of the parasitic hooklets in the urine and by the blood picture. Polycystic kidneys may be eliminated by careful anamnesis, the bilaterality of the affection,



the urinary findings and pyelography. There may be a history of heredity.

In women, if the tumor be large, the usual diagnosis is that of ovarian cyst. Careful examination will reveal the starting point of the cyst and this coupled with a history of menstrual irregularities and the facies ovarica ought to turn the investigation to other organs.

Cystic disease of the spleen, both parasitic (hydatid) and nonparasitic is to be taken into account in left sided growths. The principal symptoms of non-parasitic splenic cyst is pain, at times sharp, at others dull and dragging. As the growth progresses, pressure symptoms on neighboring organs will appear. The enlargement of the spleen is usually felt to the left of the midline, but may be dislocated to any part of the abdominal cavity. In hydatid cysts of the spleen, the development posteriorly gives rise to fluctuation in the lumbar region.

Cysts of the liver show bile salts in the urine and jaundice. In cystic disease of the gall bladder, the tumor is movable and there is the typical pain radiating to the shoulder. Biliary pigments may be present in the urine. The Graham test will be found useful.

Cysts of the omentum, although very rare, may be taken into account.

Both parasitic and non-parasitic cyst of the pancreas may grow to considerable size. The tumor is immovable. When the cyst develops between the stomach and colon, an area of dullness is found that is never present in renal cyst. Steatorrhea, glycosuria and depletion are usually present.

Hydronephrosis and pyonephrosis may simulate the solitary cyst, but the history of the case, the constitutional symptoms, and the urinary findings combined with pyelography should be sufficient to distinguish between them.

The following case is one in which the diagnosis was partially made, inasmuch as the tumor was definitely connected with the kidney.

Male, aged 21, Mexican laborer, was referred to Dr. George Turner early in March, 1929, for examination of a mass in the abdomen. A firm, rounded, smooth mass was felt in the upper left quadrant, extending from beyond the costal margin to about two inches below the navel. Laterally it passed the median line. There was no tenderness on palpation. The tumor gave the impression of solidity, but something suggested to the touch that fluid was present. The mass was located rather lower than a tumor of the spleen is usually found. Dr. Turner made a Wassermann and urinary examination. The patient was given a barium meal and the stomach and intestinal tract were studied. On account of the location of the tumor, he thought at once a splenic cyst. The stomach and small intestine were dis-

placed to the right and forward while the splenic flexure of the colon was displaced downward and past the median line. None of the symptoms of splenic umor was present, so the next organ to be investigated was the kidney.

The history of the case was that about six months previously he had noticed the swelling of the abdomen. There was no pain, but he said it interfered when he stooped over. He is constipated.

About four years before, he had been run over by a truck, the wheels passing across the abdomen at the level of the kidney region. This accident put him in bed for a month with pain in the kidney region. At no time did he have blood in the urine.

On March 15th, he was cystoscoped and pyelogram made. A No. 6 ureteral catheter passed up the ureter on both sides without meeting obstruction. The flow of urine and the excretion of pathalein was normal on the right side, but the urine was greatly diminished on the left and the excretion of dye was the merest trace in 15 minutes.

Sodium iodide solution was injected in the left catheter, but, as will be seen from the pyelogram



Fig. 1. Pyelogram

(Fig. 1), the solution did not reach the pelvis of the kidney, but meeting obstruction returned into the bladder. The pyelogram shows the catheter deviating to the right across the spinal column to enter the tumor which is dimly but definitely outlined. Evidently, we had to deal with a kidney tumor although its nature was not suspected. The patient was sent to the City-County Hospital.

On March 18, 1929, nephrectomy was done. An incision was made reaching from the lower border of the twelfth rib to the crest of the ilium. The superior triangle was opened and enlarged allowing the presentation of a tense, glistening, globular mass. A trocar was inserted and a large quantity of chocolate colored fluid drawn off. As the mass was not reduced to the point where it could be easily delivered an incision was made and a large

amount of old blood, almost solid, was removed from the sac. There were dense adhesions everywhere that necessitated a lot of tedious work. The ureter was found and tied off. The pedicle was caught by three Kelly clamps. While passing a suture on a needle around the pedicle, an alarming hemorrhage occurred, which was controlled by packing with "lap" pads. The tumor was extracted. During the excitement, the needle was lost, but was recovered a couple of weeks later. Owing to the patient's condition, the wound was hurriedly brought together and the patient returned to bed. Saline and glucose solutions were given intravenously. After this, recovery was uninterrupted.

In some of these cases where the tumor is not too great, it is possible and recommended to separate the sac from the renal tissue. In this case, the enormous size of the tumor, coupled with the fact that the kidney was practically without function, indicated a nephrectomy. The kidney substance evidently had been destroyed by pressure.



Fig. 2. Photograph of kidney and cyst after removal

**PATHOLOGICAL REPORT** (Dr. George Turner): The tissue consists of the left kidney together with a large solitary cyst springing from its cortex (Fig. 2). The kidney tissue proper is uninvolved except it is greatly compressed and is flattened out in the cyst wall. The cyst is very large. It measures 30 cm. in diameter. The wall is thick and fibrous. It measured 8 mm. in thickness. The wall carries moderately abundant well formed blood vessels. There is scattered small round cell and large mononuclear infiltration. The cyst cavity is lined with flat cuboidal cells. The cyst wall is just as thick and fibrous adjacent to the kidney substance as elsewhere and separates easily from the kidney tissue.

**Diagnosis:** Solitary Cyst of Kidney (Hematic).

The question arises as to whether the tumor is a serous cyst into which, by reason of injury, blood has extravasated, or is it a true hematic cyst. Or again, was the cyst either serous or hematic, in existence prior to the injury four years ago? Or was trauma the cause of it?

From the authorities quoted in this article, these cysts of either variety are congenital in origin. But could it not be possible that trauma caused a rupture of some of the blood vessels, probably fragile or aneurysmal, repeated hemorrhages causing a steady

growth? On the other hand, it is more likely that the mass is a hemorrhagic cyst per se, the trauma being incidental and causing the inflammatory condition evidenced by the dense adhesions.

The author is greatly indebted to Drs. George Turner and James J. Gorman for valuable assistance in working out the diagnosis in this case.

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#### DISCUSSION

(Papers of Drs. Shultz and Jamieson).

**DR. GEORGE SHIELDS**, Phoenix, (opening):—The chief point gotten from these papers is that there should be thorough urological study. Have talked with doctors who have an idea that uterine stones never have to be operated on; these papers give different ideas. Would like to inquire what percentage of cases require operation. Anomalies are fairly common and can cause a great deal of trouble.

**DR. M. MATANOVICH**, Phoenix:—Expressed great interest in the case of Dr. Jamieson. He presented a patient for discussion and diagnostic suggestion. The pyelogram showed the ureter pushed to the middle, which suggests that the lesion is retroperitoneal. The question as to the condition of the other kidney has yet to be worked out, it having been delayed on account of the patient's condition.

**DR. K. D. LYNCH**, El Paso:—In discussing the case of the above patient, thinks the double pyelogram should be made, and if there is evidence of polycystic kidney, do not operate unless definite symptoms occur.

**DR. E. PAYNE PALMER**, Phoenix:—All of the papers in this symposium have been especially interesting and instructive, but Dr. Jamieson's paper on "Solitary Cyst of Kidney" is most interesting to me because of the fact that I have had two of these cases during the past two years.

The first was a female, age 45, married, seen Aug. 12, 1927. She was never sick until three years ago except when she had usual childhood diseases. Started to menstruate when 11 or 12 years old. Began to have pain in left side, which at times extended across abdomen to the right. This pain always came on at menstruation time and lasted for an indefinite number of days after menstruation had ceased. At one time this severe pain lasted over a period of about six months. Patient always felt tired and run down.

A general physical examination gave normal findings except that there was a large tumor filling



the upper and outer portion of the abdomen extending to the right of the median line. Tumor was freely movable, could be displaced to the right side and into the pelvis and replaced back into position of the left kidney. Functional kidney test showed the right kidney to be functioning a little in excess of normal and the left kidney about fifty per cent, with no other abnormal findings. Pyelogram was not made. Diagnosis: Cyst of the left kidney.

Operation Aug. 23, under ether anesthesia. Exploration of the abdomen and right kidney showed the abdominal contents to be normal and the right kidney to be normal except a slight enlargement. After opening the abdomen, examination of the opposite kidney should always be made when a cyst of one kidney is suspected and extirpation anticipated. The posterior peritoneal layer over the tumor was incised and the two anterior and posterior peritoneal surfaces were sutured together in order to make the operation extra-peritoneal. After exploration of the cyst, it was found to be too large to remove unless a very extensive incision was made. The cyst occupied the lower half of the kidney. A trocar was inserted and four liters of fluid were drained off. A large portion of the kidney was destroyed, about fifty per cent remaining. Following the draining of the fluid, nephrectomy was an easy procedure, the sutures used in bringing together the anterior and posterior surfaces were cut loose and the posterior surface closed except for space for drainage from the kidney pouch through the abdomen and abdominal wound. The anterior wound was closed in layers. Patient made an uneventful recovery; left the hospital on the fourteenth day and has enjoyed splendid health ever since.

The second case was a male child, age 2 years, greatly emaciated, seen June 28, 1928.

About one year before, mother noticed slight swelling in baby's abdomen. Took the baby to a doctor who had been treating the child medically ever since. During this time the mass in abdomen had gradually become larger and child had been losing weight and appetite.

Examination showed a large and irregular mass filling all of the right side of the abdomen and extending into the left. Tumor was soft and palpable and gave the feeling of fluid contents. Tumor extended to the right lumbar region and was apparently fixed at this point. Diagnosis: Cyst of the right kidney.

Urological and kidney functional tests were not made in this case. Estimated urinary output gave the impression that the function was normal.

Operation June 28, under ether anesthesia, through a six inch right paramedian incision, which, by the way, extended from the lower costal margin to the symphysis pubis. After opening the abdomen, exploration showed the tumor to be retroperitoneal and attached on the right side, pushing the cecum and the ascending colon across to the left of the median line. Otherwise abdominal contents were normal. Left kidney was examined and found to be somewhat larger than normal. The posterior peritoneal layer covering tumor was incised and posterior and anterior peritoneal layers sutured together closing peritoneal space. The tumor was found to be a single cyst, a small amount of kidney tissue remaining in the upper pole. The greater portion of the kidney had been destroyed. The tumor was dissected free with pedicle vessels and ureter. The vessels were triple clamped and the ureter double clamped. Pedicle was then incised and tumor removed. Carbolic acid and alcohol were applied to the ureter and vessels. The vessels and

ureter were double ligated. Wound was carefully inspected and as there was no bleeding point and had been no spilling of contents, it was deemed advisable to close the wound without drainage. The anterior and posterior peritoneal layers which had been sutured together, were cut loose and the posterior peritoneal layer closed over the kidney pouch. Abdominal wound was then closed without drainage.

This child made a satisfactory recovery and left the hospital on the seventeenth day. Was recently seen. He has grown rapidly and is in splendid condition.

DR. W. G. SHULTZ, Tucson:—Answering Dr. Shields' question about the incidence of stones. Twenty per cent of ureteral stones require operation. (Shows some slides of ureteral stone.) Dr. Jamieson's paper carries a warning for the general practitioner, who sees these patients first. The patient cannot usually locate his trouble sufficiently to indicate that he should seek the advice of the urologist, and he usually calls his family physician. If the physician is careful, he will usually call in the urologist. Obstruction anywhere along the ureter will very soon produce permanent damage to the kidney. It is very rare to see a case of pyelitis without nephritis; during back pressure the function of the kidney is damaged. It is surprising how large a stone will pass when helped by dilation of the ureter; on the other hand some small stones will not pass and must be operated upon. It is well worth reporting on any case of serous cyst in children, because there are only six of these to be found in the literature.

## NEPHRITIS

HARLAN P. MILLS, M. D.

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(Presented to the Phoenix Clinical Club and to a joint meeting of the Maricopa County Medical Society and the Staff of the Good Samaritan Hospital, at Phoenix, March 24, 1930).

The kidneys serve as the chief excretory organs of the body, this function being shown in the elimination of the end products of protein metabolism, in the maintenance of the normal volume and composition of the blood, and in assisting in the neutrality regulation of the body fluids.

The end products of protein metabolism are mainly urea, uric acid and creatinin which, being in solution in the blood plasma and being of no further use, should be excreted. The kidneys respond to any change in the volume of the blood, excreting fluids freely when the volume is increased and retaining fluids when the volume is reduced. By the ability of the kidneys to excrete the inorganic salts, retaining certain basic radicals and eliminating certain acid radicals, the proper degree of neutrality of the organism is maintained. Some of the substances excreted in the urine are excreted in direct proportion to their concentration in the blood; while other substances do not appear in the urine, except in traces, until they have reached a degree of concentration which, as it were, overflows, or exceeds their threshold



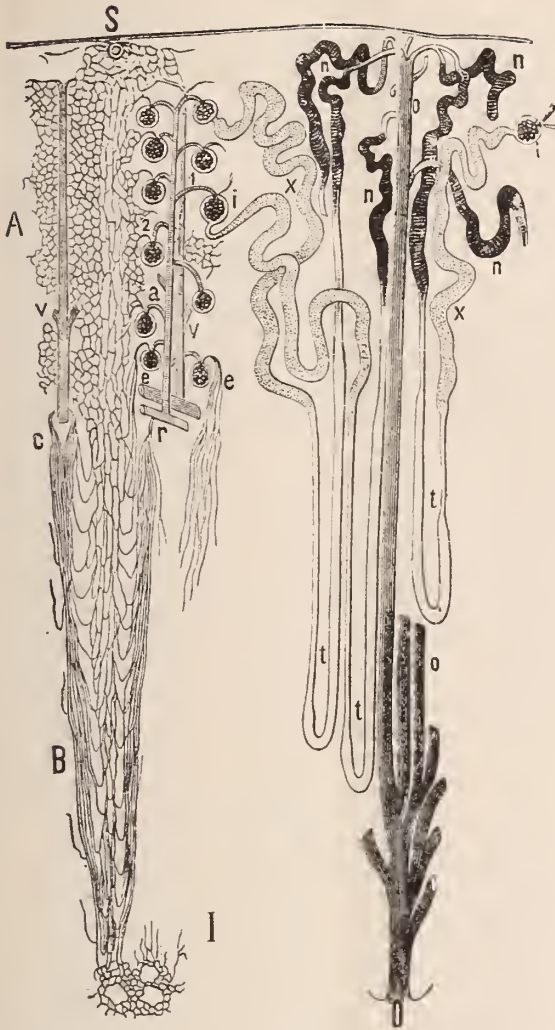


Fig. 1. The Nephron or functional unit of the kidney. At (a) and (1) are efferent vessels entering glomeruli; afferent vessel at (2) with capillary system which surround the convoluted tubules diagrammatically shown under (s); proximal convoluted tubules are shown light in color (X), Henle's loop at (t), and distal convoluted tubules in black (n); collecting tubule at (o). (Illustration from Landois' Physiology.)

values in the blood stream, substances which Cushny has designated as threshold bodies, especially referring to glucose and a few less important substances.

The nephron (Fig. 1), or functional unit of the kidney, is composed of a Malpighian body, consisting of a glomerulus, surrounded by Bowman's capsule, and a uriniferous tubule from its beginning to the point where it unites with a collecting tubule and including the proximal and distal convoluted portions, connected by Henle's loop. The glomerulus (Fig. 2) consists of a loop of capillaries forming the terminal network of a branch of an afferent artery; these capillaries reunite to form the efferent vessel. The wall of

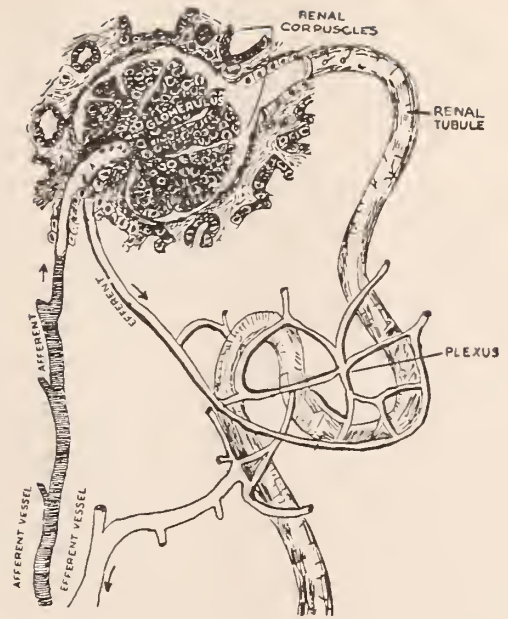


Fig. 2. (From Kimber & Gray's Anatomy for Nurses.) Magnified view of glomerulus, showing afferent and efferent vessels, proximal convoluted tubule and plexus of capillaries.

these capillary loops is a single layer of endothelium, without definite cell outline and with numerous minute openings. After leaving the glomerulus the efferent vessel breaks up into a plexus of capillaries upon the adjacent tubules. The glomerular capsule consists of a double layer of epithelium, the inner layer dipping into the folds of the capillary loops, the outer layer forming the lining of the wall of the capsule, which is the dilated blind extremity of a tubule.

The proximal convoluted tubule is about fourteen millimetres in length and lined with low columnar epithelium. This portion passes into Henle's loop which ends in the distal convoluted portion, also lined with columnar epithelium and ends with its junction with a collecting tubule.

The blood supply of the kidney is derived from the renal artery entering at the hilum, dividing and subdividing until, at the margin of the cortex, the arcuate vessels give off the interlobular arteries whose subdivisions terminate in the glomeruli, from whence the blood is carried by the efferent vessels to a second set of capillaries surrounding the tubules, and is then collected by the interlobular vein and returned to the renal vein. Thus, all the arterial blood to the nephron passes through the capillary loops of the glomerulus, a very important consideration, as will be seen later.

The scope of this paper will not permit a review of the various theories of the man-



ner in which the function of excretion is accomplished. However, a very brief summary may be given. The glomerulus acts as a filter, the process being purely a physical one. The filtrate as it is contained on Bowman's capsule is a deproteinized serum, which, on passing through the tubules, is changed by absorption of water and some of the solids, thus concentrating the filtrate. This absorptive process is supposed to be an active absorption due to the vital activity of the tubular epithelium. The activity of the filtration process depends chiefly on the pressure in the blood stream and rate of flow through the capillaries of the glomerulus, while the activity of absorption depends on the rate of flow through the tubules, the amount of absorbable substances present and the vital activity of the epithelial cells of the tubules.

Our conception of what is implied by the term nephritis has undergone many changes and is still subject to revision. While the outline we will give is quite generally accepted, we are aware that there are investigators whose observations and experiments suggest that the conclusions are at fault, because largely based upon histological findings which, to a large extent, represent terminal lesions, these being more pronounced in the kidney due to a greater concentration of toxic bodies at the point of excretion. They contend that changes in the liver and other organs are just as essentially a part of the process as are renal lesions and the conclusion reached is that nephritis is a general or constitutional disease and should no more be called a disease of the kidney than that scarlet fever be called a disease of the skin.

The term "Bright's disease" originally referred to disease of the kidneys associated with dropsy and albuminuria, a purely clinical conception. Later, the term nephritis came into use, representing pathological and clinical concepts and having a much wider significance, including inflammatory, degenerative and vascular changes in the kidneys, which were classified into acute and chronic parenchymatous and chronic interstitial nephritis, this classification being an attempt to correlate the clinical picture with the pathologist's findings. This classification has proven unsatisfactory, certain pathologists (Lubarsch, Ribbert) questioning whether there is such a thing as a parenchymatous inflammation. Later, Fahr and others discarded the term chronic interstitial nephritis, claiming that it does not represent a definite entity; as one has said, it is "neither nephritis nor interstitial." More recent studies in the pathology of nephritis tend to emphasize

the importance of the glomeruli in the fundamental changes and relegating to a place of minor importance the interstitial changes as being almost entirely secondary in sequence, and whose increase is to replace the destruction of other elements.

The three histological elements which make up the nephron, the physiological unit of the kidney, and which are considered of first importance in the pathology of nephritis, are, (1) the terminal arterioles of the afferent vessels; (2) the glomerulus, (3) the system of tubules which comprise the balance of the nephron, the glomeruli being pre-eminent as the starting point of all forms of true nephritis. The involvement of the tubules may arise secondary to, or in conjunction with, the glomerular changes, thus having a part in a true nephritis. Tubular involvement may also occur as a separate entity, as in a degenerative process resulting from toxemias of various origins, to which Muller gave the name "nephrosis," a term which has had acceptance for many years. Elwyn criticizes its use except in reference to lipoid nephrosis, preferring to designate other toxic forms by name, as the bichloride kidney, the kidney of pregnancy, etc. The changes in the vascular system are chiefly those of arteriosclerosis, which result in a diminution of blood supplied to the glomeruli, with resultant diminution in function, resulting finally in a contracted kidney with excess of interstitial tissue, now classed as the arteriosclerotic diseases of the kidneys. The following classification by Elwyn is quite brief and appears to be as satisfactory as any proposed up to this time:

**I. Glomerulo-Nephritis.** Inflammation of the glomeruli the principal pathology with secondary changes in the tubules.

A. Focal Glomerulo-Nephritis, in which only a fraction of the glomeruli are involved; (a) embolic focal glomerulo-nephritis; (b) non-embolic focal glomerulo-nephritis.

B. Diffuse Glomerulo - Nephritis: (a) acute diffuse glomerulo-nephritis, all the glomeruli uniformly involved; entirely subsides or passes into one of the following; (b) subacute diffuse glomerulo-nephritis; (c) subchronic diffuse glomerulo-nephritis; (d) chronic diffuse glomerulo-nephritis.

**II. Nephrosis:** Tubular degeneration.

A. Nephrosis of pregnancy.

B. Lipoid nephrosis.

C. Nephrosis of amyloid disease.

D. Nephrosis of bichloride of mercury poisoning, or tubular nephrosis.

### III. Arteriosclerotic Diseases of the Kidney.

A. Arteriosclerosis of the renal artery, with no definite symptoms.

B. Renal Arteriolosclerosis, without insufficiency and with benign hypertension.

C. Renal arteriolosclerosis, with insufficiency and malignant form of hypertension.

**Glomerulo-Nephritis:** When we consider that practically the whole blood supply of the nephron must traverse the glomerulus, the importance of this part in the physiology and pathology of the kidney is evident. It is now considered that acute glomerular involvement is the starting point of all forms of true nephritis, excluding from this terminology the nephroses and the arteriosclerotic diseases. Glomerulo-nephritis may occur as a focal involvement, the extent of the pathology varying widely. In the embolic type, the etiology is practically always a subacute endocarditis, the bacteremia resulting in embolism of certain of the capillary tufts of the glomerulus, usually only isolated tufts of a glomerulus being affected

capsule and loops of the glomerulus. This area often takes on a crescentic form (Fig. 5), and when the acute process heals there is left a crescentic or pyramidal hyalin mass.

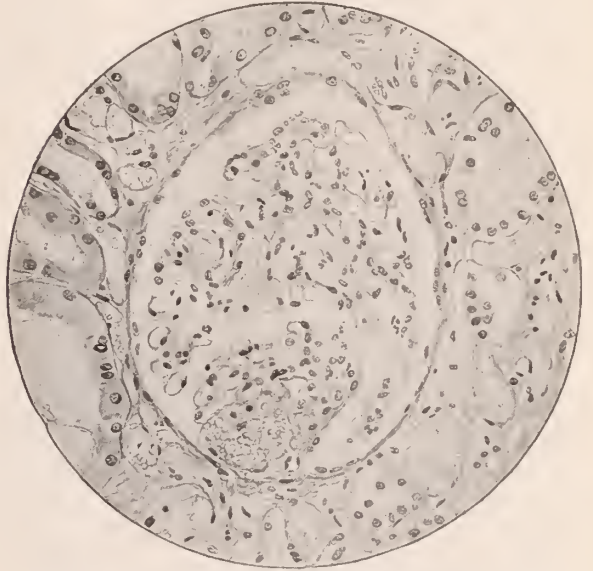


Fig. 4. Capillary thrombus of isolated tuft of glomerulus.

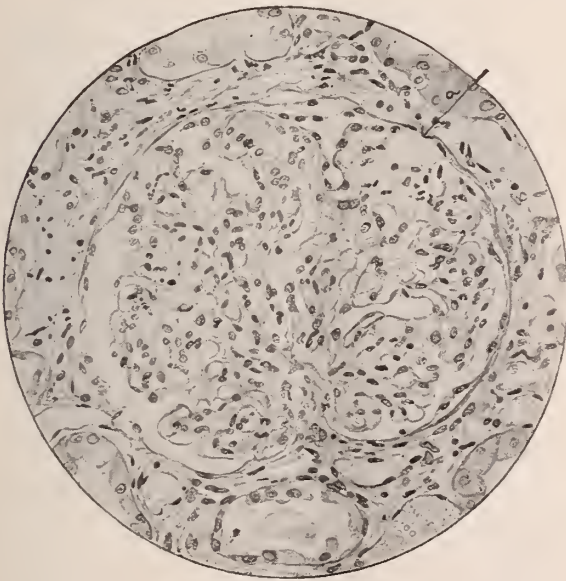


Fig. 3. Hyalin thrombus of isolated tuft of glomerulus (indicated by arrow.) (Figures 3 to 15 are taken from MacCallum's Textbook of Pathology, Saunders, 1920.)

(Figs. 3 and 4) and only isolated glomeruli being involved, the remaining tufts or glomeruli showing no changes. The glomerular endothelium of the involved capillary loops show first a swelling and loss of cell outline and granular appearance. Then the lining cells of Bowman's capsule over the affected tufts show involvement with desquamation into the capsular space, with fusion of the

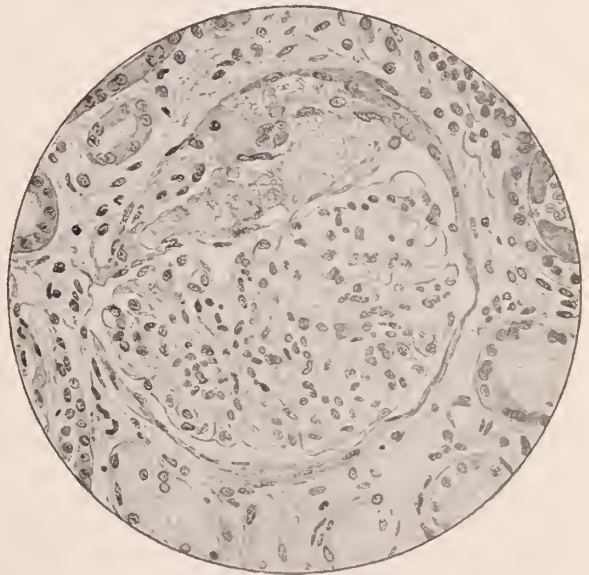


Fig. 5. Crescentic mass of desquamated cells in capsular space.

If the entire glomerulus is involved, there is complete replacement by hyalin fibrous tissue in contour identical with the dead glomerulus. The tubules in intimate relation with the affected glomeruli show cellular changes, the epithelium becoming atrophied, the cords of cells surrounded by round cell infiltration and later fibrous replacement tissue is deposited.



A milder type of focal glomerulo-nephritis is also described as being due to a bacteremia such as sometimes occurs with scarlet fever and streptococic tonsillitis, without definite embolic obstruction of the glomerular capillaries, but in which there is injury to the capillary wall, followed by proliferation and deposit of exudate. This condition usually heals with little or no permanent loss of function.

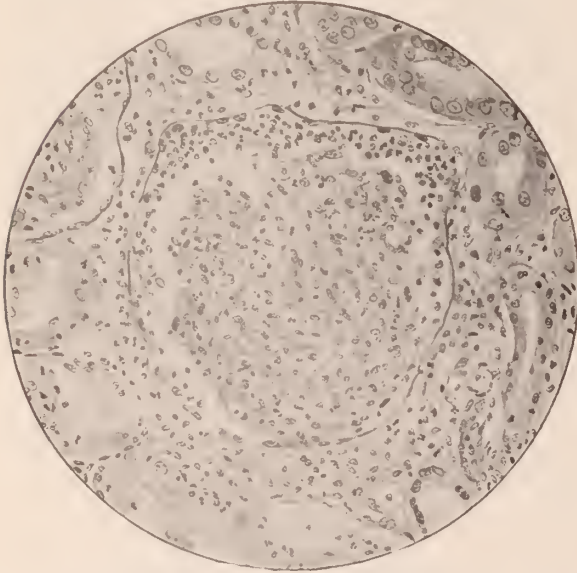


Fig. 6. Glomerulus in acute glomerulo-nephritis.

In acute diffuse glomerulo-nephritis, we have a condition very different from acute focal nephritis, both in extent of pathology and in degree of impairment of renal function. Here we have not only involvement of practically all the glomeruli but also of all the glomerulus, with consequent marked renal insufficiency. The first change is swelling of the capillary endothelium, the lumen becoming so narrowed that the red cells almost disappear. An exudate forms about the capillary loops and filling the capsular space, composed of leucocytes, nuclei of degenerated endothelium and granular material (Fig. 6). As the glomerulus loses its blood carrying power, the tubules become involved and we find swelling, fatty and hyalin degeneration and desquamation of the epithelium, as secondary to the glomerular changes and resulting from lack of blood supply. The interstitial tissue also shows round cell infiltration and edema, the infiltration being especially marked surrounding the glomeruli. Whether the essential cause of diffuse glomerulo-nephritis is bacterial or toxic, or these in combination, is not definitely established. Though the condition occurs frequently as a complication of

streptococcus infections, as endocarditis, streptococic sore throat, and especially scarlet fever, yet this organism is seldom found in the urine, in contrast to the frequent finding of it in focal glomerulo-nephritis. Even in the entire absence of a known infection, very sudden development sometimes follows exposure to cold, or sudden chilling of the skin, often within twenty-four hours. Cases due to exposure are of shorter duration and recovery more complete than those complicating an infection, indicating less organic change in the kidney structures.

Acute diffuse glomerulo-nephritis, if it does not recover or terminate fatally in a short period of time, progresses into a condition which may be classed as a subacute or chronic glomerulo-nephritis, depending on the time element and activity of the process. As in the acute form, so in the subacute and chronic types, the glomerulus is primarily involved and the tubular and interstitial changes are secondary. The capsular

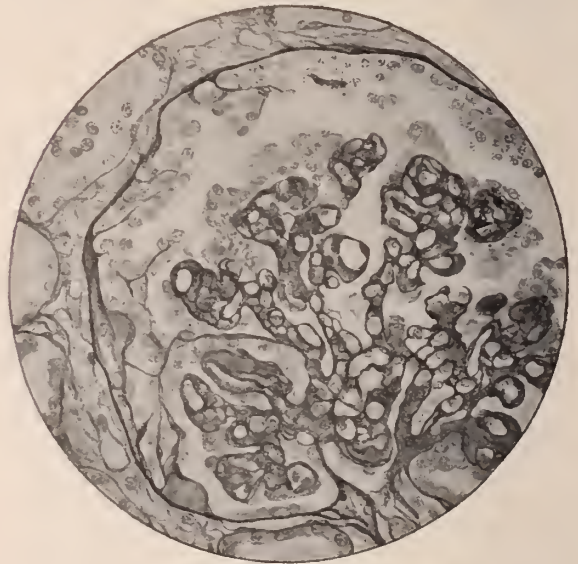


Fig. 7. Proliferation of capsular endothelium in subacute glomerulo-nephritis.

endothelium is proliferated (Fig. 7), crescentic masses form in the capsular space (Fig. 8), there is cellular deposit in the capillary tufts, which later undergoes hyalinization (Fig. 8), transforms the glomerulus into a round hyalin body, the cell structure being entirely lost (Fig. 9). The tubules show degenerative changes, dependent on the degree of glomerular involvement, these changes resulting in atrophy of the tubules in relation to the hyalinized glomeruli. The interstitial tissue is increased surrounding both the tubules and glomeruli.

This is a progressive condition, lasting from two to twenty-five years, and terminat-



ing ultimately in renal insufficiency and uremia. The chronic form has frequently been classed as secondary contracted kidney, but it is important to keep in mind that the changes have their origin in an acute diffuse

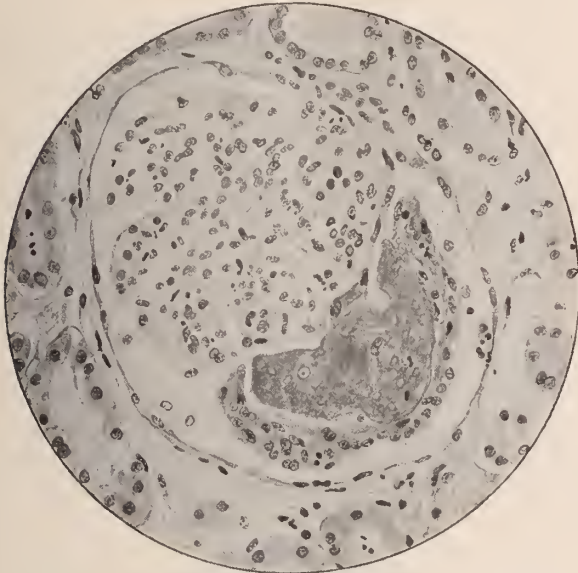


Fig. 8. Hyalinized desquamated endothelium in subacute glomerulo-nephritis.

glomerulo-nephritis. The more chronic type represents a gradual hyalinization and obliteration of a majority of the glomeruli, the atrophy of the corresponding tubules and their replacement by connective tissue, with sclerosis of the afferent arteries. Clinically,

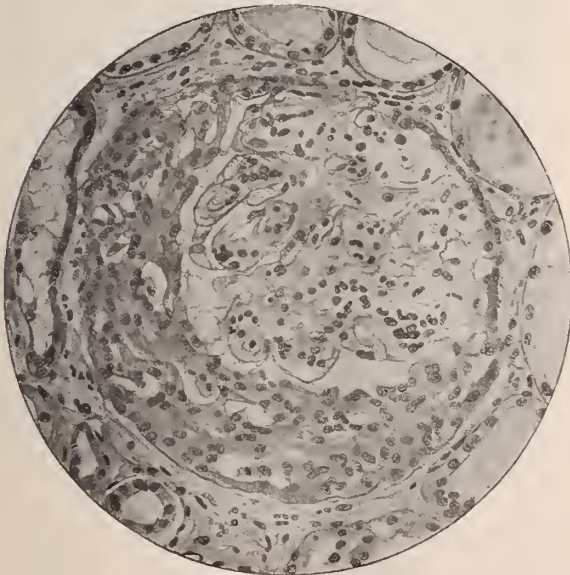


Fig. 9. Large crescent formation and collapse of glomerulus.

there is persistent increase in blood pressure, an increasing loss in variability of renal function, shown by prolongation of elimina-

tion time, polyuria and nocturia and a lessened ability to concentrate the urine, terminating in absolute renal insufficiency and uremia. The increase in blood pressure is supposed to be a compensatory mechanism to maintain filtration pressure in the glomeruli.

**Nephrosis.** Tubular degenerative nephritis. Acute parenchymatous nephritis.

A. The kidney of pregnancy. The view has gained ground that eclampsia cannot be identified with uremia and that the renal symptoms are only a part of the toxemia of pregnancy. The glomeruli show changes of variable degree and extent, and though there is swelling of the capillary walls and slight cell proliferation, the changes are insignificant as compared with those in acute diffuse glomerulo-nephritis. However, in the proximal convoluted tubules there are marked changes in the form of albuminoid degeneration, with more or less widespread fatty deposit in the cells and the formation of casts, often obtaining hemoglobin in large amounts (Fig. 10).

B. Lipoid Nephrosis. The clinical picture is characterized by a chronic course, edema, reduced amount of urine, albuminuria, absence of hypertension and absence of renal insufficiency, as shown by normal NPN and urea, and a lowered albumin content of the blood. True lipoid nephrosis is rare, as compared to other forms of kidney involvement. The pathological picture includes tubular degeneration, with cloudy swelling, fatty and hyalin changes, with necrosis and degeneration of tubular epithelium. These changes are not limited to the proximal tubule, but extend to the distal convoluted tubule and to Henle's ascending loop. There is associated edema and lymphocytic infiltration of the interstitial tissues.

C. The nephrosis of amyloid disease. This occurs in chronic suppurations, chronic tuberculosis, etc. The kidney is of firm consistency, grey yellow color and waxy appearance. The glomeruli are always involved and the tubules show varying amounts of amyloid deposit in the epithelium and the lumen contains various types of casts.

D. The nephrosis of mercury poisoning. Ingestion of bichloride of mercury results in renal injury and since this injury is shown chiefly in the tubules, the lesion has been classed as a nephrosis. It differs from the lipoid nephrosis in that necrosis of the tubular epithelium is the prominent change. (Figs. 11 and 12.)

III. Arteriosclerosis of the kidney. Sir James Mackenzie has shown that "one of the most striking changes that takes place in the progress of arterial degeneration is the



limitation of the capillary fluid." Since the function of the kidney depends upon the intact state of its capillary vessels and the proper degree of pressure in the ar-

terial system, the limitation of this capillary field brings disastrous results. There is no compensatory mechanism available as a factor of safety. Arteriosclerosis of the renal artery and larger branches results in reduc-

tion in size of the kidney, with irregularities on the surface and with adherent capsule. In the portion of the cervix supplied by these narrowed or obliterated vessels, there is col-

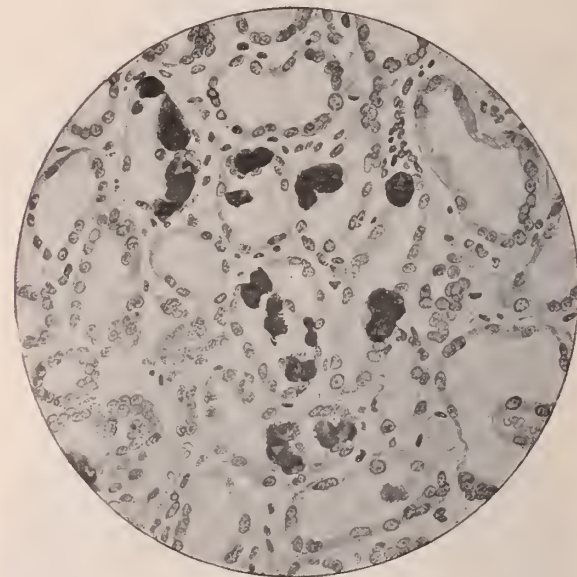


Fig. 10. Tubules showing lipoid and hyalin changes.

lapse of the glomeruli, with more or less extensive hyalinization and atrophic changes. Since this is not a diffusive process, there is sufficient kidney cortex remaining intact to carry on renal function, so no renal insufficiency is shown.

A secondary indurative process has been mentioned, which represents the end result of acute, subacute, or chronic nephritis. There is also a primary form which is sclerotic in its tendency from the beginning. These were both included under the term chronic interstitial nephritis, a term which Elwyn discards. This revision of classification of these indurative lesions of the kidney has taken place since apparatus for measuring blood pressure has come into common use, and there was found the combination of arteriosclerosis, hypertension, and evidence of kidney disease. Thus was conceived the clinical entity of cardiorenal disease. Then as the knowledge of blood chemistry developed, it was found that not all of this class

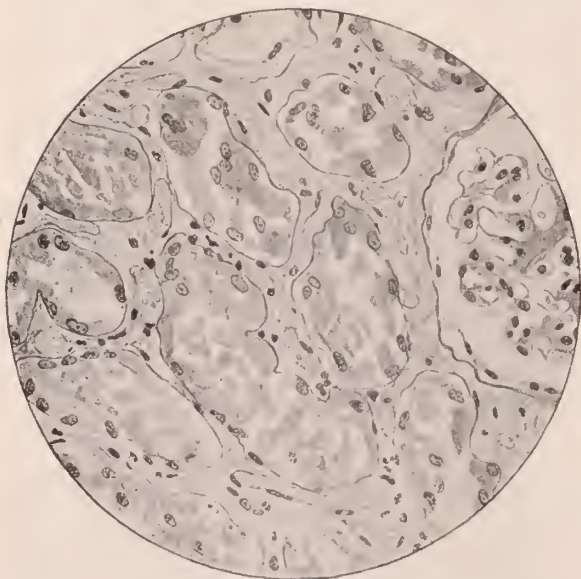


Fig. 11. Desquamation of tubular epithelium in mercury poisoning.

really had a renal insufficiency. The work of the pathologist also brought out the fact that sclerosis of the smallest arteries and arterioles is the important change, and the terms renal arteriolo-sclerosis without renal insufficiency and renal arteriolo sclerosis with renal insufficiency are used to include the conditions formerly classed as arteriosclerotic contracted kidney and, by others, as chronic interstitial nephritis. The smallest arteries and arterioles show thickened intima with hyalin and fatty degeneration progressing to complete obliteration

Fig. 12. Later stage of changes in mercury poisoning.

lapse of the glomeruli, with more or less extensive hyalinization and atrophic changes. Since this is not a diffusive process, there is sufficient kidney cortex remaining intact to carry on renal function, so no renal insufficiency is shown.



(Fig. 13). The glomerular tufts show similar changes and an obliteration of the afferent vessel, this capillary network collapses and later is seen as a hyalin, fibrous, round-

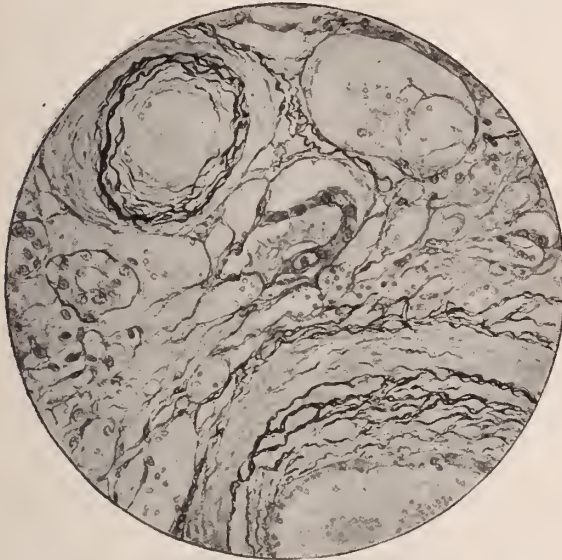


Fig. 13. Narrowing of renal vessels in arteriosclerotic diseases of kidney.

ed mass. (Fig. 14 and 15.) The tubules atrophy and connective tissue overgrowth occurs, which later shrinks, producing irregular surface and adhesion of the kidney capsule. When the amount of kidney structure involv-

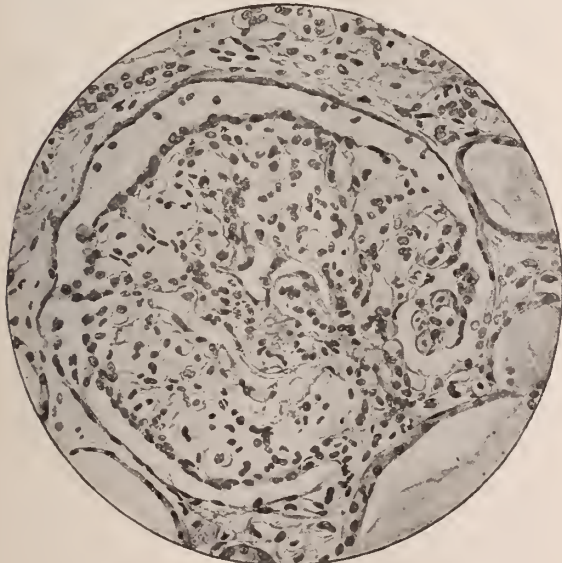


Fig. 14. Early arteriosclerotic change in glomerulus.

ed is moderate and hypertension not excessive, there is no renal insufficiency and what is called a benign hypertension exists. As the involvement progresses, more and more of the kidney parenchyma is thrown out of

function, and the effort to keep up the filtration process calls for increased pressure in the blood stream, and there develops a malignant hypertension with definite renal insufficiency. The histological changes are the same in the latter condition as in the former, except more extensive.

Fahr has described cases in which, in addition to the sclerosis, there are inflammatory changes and Aschoff and others agree that this group may not represent a very definite pathological entity, though all cases have a progressive course with marked hypertension and renal insufficiency. Elwyn, however, describes this group as a disease which is characterized clinically by hypertension of many years to which renal insuffi-

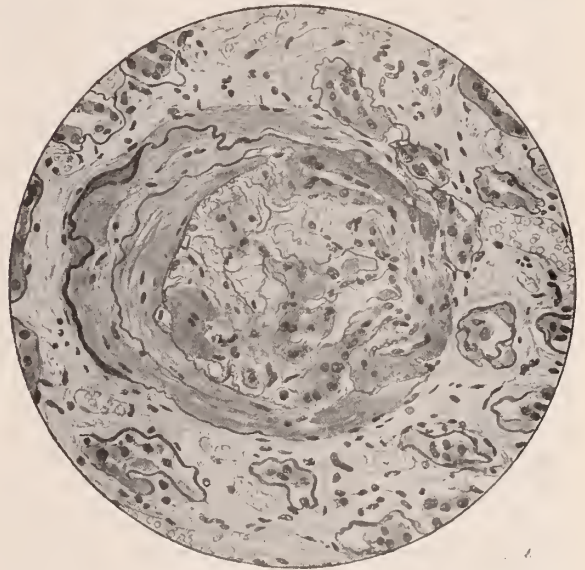


Fig. 15. Later changes in glomerulus in arteriosclerotic diseases of the kidney.

ciency is gradually added, and with a pathological picture of an extreme degree of arterio-sclerosis, and, in many instances, with chronic inflammatory changes.

(Note: There will be found, in the following pages, discussions of several cases of nephritis of various types, which will serve to illustrate the clinical phases of the disease.)

#### FIVE MONTHS' EDEMA OF THE ANKLES

(Case 16021. Case Records of the Massachusetts General Hospital, New England Journal of Medicine, January 9, 1930, p. 79).

First admission. An unmarried woman thirty-three years old of Canadian parentage entered June 29 complaining of swelling of the ankles, especially in the evening, of five months' duration.

Eight months before admission she had "influenza"—headache and aching of the joints, bones and back, with sore throat and a feverish feeling. She felt quite ill for a week, but continued to work



hard and went out a good deal at night. She felt very tired afterward. In December she felt well. In January she had severe pain over the left antrum with slight swelling. In February she found her ankles were swollen. After six days in a hospital her condition improved. For the next two months she was on a diet. Several weeks before admission she had a second attack similar to the first. She stayed in bed, and for a few weeks felt well. June 16 and 17 she had nausea, vomiting, diarrhea and abdominal cramps. For the past two nights she had passed a small amount of urine twice each night. Her usual urinary output was three pints in twenty-four hours. For the past two months she had not slept well. She had taken aspirin frequently for pain over the antrum. She had lost no weight. Her upper eyelids were puffy in the mornings. She had hemorrhoids. A week before admission a physician of this hospital found the non-protein nitrogen 24, the blood chlorides 632.

Her mother died of cardiorenal disease, one sister of brain tumor, another of tuberculosis. A living sister also had tuberculosis. The patient had measles at three. She had had possible typhoid fever and rheumatism. Every winter she had several attacks of tonsillitis. Eight years before admission she had influenza. Two years before admission she had an operation for double antrum done at the Eye and Ear Infirmary. She had a headache every week, leaving her head sore. She was rather nervous and thought she did not remember so well as she used to.

Clinical examination showed a well nourished woman. Upper teeth false, many carious lower teeth. Some pyorrhea. Tenderness over both antra, especially the left. Lungs normal. Apex impulse of the heart not seen or felt. Left border of dullness 8 centimeters from midsternum, 1 centimeter outside the midclavicular line. Right border of dullness 3.5 centimeters, supracardiac dullness 6. Sounds and action normal. No murmurs. Aortic second sound greater than pulmonic second. Blood pressure 148/110 to 135/95. Pulses and arteries normal. Abdomen pendulous, soft. Marital introitus. Fundus in third degree retroversion. Small external hemorrhoidal tab. The examination was otherwise negative.

Urine: 33 to 72 ounces, specific gravity 1.002 to 1.124, at a two-hour test 1.002 to 1.010, a very large trace to the slightest possible trace of albumin at all of seventeen examinations. The sediment was full of granular casts and bacteria at one examination, occasional hyalin casts at the other, 4 to 8 leukocytes at both, 1 to 2 red cells. Blood: 10,500 to 8,000 leukocytes, 80 per cent polynuclears, 4,500,000 to 4,900,000 reds, hemoglobin 75 to 85 per cent, platelets diminished, smear otherwise normal.

Chart normal.

X-ray examination showed the heart measurements apparently within normal limits. The frontal sinuses were rather rudimentary. There was thickened membrane of each antrum, especially of the right. One tooth showed periapical absorption. There was a remaining root fragment of a molar. The kidney shadows were not remarkable in size or position. Just below the right lateral border of the sacrum were two shadows of increased density, probably bowel shadows. Just lateral to the transverse processes of the 4th and 5th lumbar vertebrae was an indefinite shadow of increased density which it was thought might represent a calculus, although its appearance suggested an artefact. A second examination two weeks later showed this same shadow. It was not in the usual position, but

was somewhat lateral to the usual position of the ureter.

In the ward the patient was comfortable and had no edema. July 9 she was up and about. Two days later there was very slight pitting edema over the ankles which subsided after thyroid extract therapy and return to bed. July 18 five teeth were extracted. A week later she still had slight pitting edema over the lower legs after being up for a few hours. She had also some pain in the left antrum in bad weather. A throat consultant advised no treatment. July 24 she was discharged slightly relieved.

History of interval. After leaving the hospital she was constantly under medical care. She rested in the country for several months and felt very well, although some edema of the ankles persisted. She then worked very hard, keeping fairly well to her diet, and felt very well until November, a year and four months after discharge. Then her ankles and face became much swollen and she had a dragging sensation all over. She spent a week in a hospital with some improvement. After two weeks of rest at home she began to work again, though she did not feel strong. In December she noticed that her abdomen was swelling. After two weeks she spent three weeks in the hospital, again with improvement. While there she developed a skin lesion at one time thought to be erysipelas,—red, swollen, painful lesions, not symmetrical, recurring in different regions. After a week at home the swelling of her abdomen increased, causing dyspnea, nausea and occasional vomiting. She again returned to the hospital. During her stay this time she was fairly ill, with shaking, sweating, unproductive cough, at times violent, and fever lasting two weeks. She thought a diagnosis of pneumonia was made. Five days before her second admission she was sent in from her hospital to the Eye and Ear Infirmary on account of recurring left supraorbital pain. It was thought at the infirmary that she probably had "a little something" in her sinuses. She was transferred to the Massachusetts General Hospital for treatment of the general condition.

She had had hemorrhoids for years, and had at times noticed a little blood.

Second admission, March 30, twenty months after her first admission.

Clinical examination showed a pale, very edematous looking woman. Tonsils missing. Left antral region tender. Moist rales throughout both lungs. Apex impulse of the heart not seen or felt. Left border of dullness 12 centimeters from midsternum, 4.5 centimeters outside the midclavicular line. Right border one centimeter to the right. Supracardiac dullness 4 centimeters. (\*) Pulses and arteries normal. Blood pressure 190/120 to 90/70. Abdomen showed uniform soft distention. Generalized edema. Immense edema of vulva. Marked edema of the sacrum and legs. Obliteration of optic cup. (\*) Sounds normal. Rhythm rapid. No murmurs).

Urine: 68 to 47 ounces, specific gravity 1.020 to 1.025, a large trace of albumin at all of four examinations, sugar at all of three, acetone and diacetic acid once, 6 to many leukocytes at all of four sediment examinations, hyalin casts at three, the last specimen loaded with hyalin and granular casts. Blood: hemoglobin 70 per cent, reds 2,800,000 to 3,960,000, slight anisocytosis once, two smears otherwise normal, leukocytes 8,700 to 10,000, polynuclears 62 to 70 per cent. Hinton negative. Non-protein nitrogen 23 to 44 milligrams. Total protein 3.162 per cent to 4.3 per cent. Blood cholesterol 667 milligrams. Basal metabolic rate 3, pulse 99, weight 73.5 kilograms. Blood sugar 34 milligrams.



Temperature 97.1° to 99.3°, pulse 83 to 103, respirations 20, with a terminal rise to 105.3°, 170 and 31.

April 2 the heart could not be percussed. The sounds were of good quality. There was a systolic murmur at the base. A few crepitant rales were heard at the lung bases. There was massive edema of the abdominal wall and possible ascites. April 4 the total protein of the blood was half the normal. Early that morning the patient had a chill with a temperature of 104.2°. There was slight tenderness in both lower quadrants; no spasm. The right lung base showed rather coarse crepitant rales. She sank rapidly into coma. The blood pressure dropped. April 5 the albumin-globulin ratio in the blood was reversed—albumin 2.1 per cent, globulin 2.2 per cent. That morning she died.

#### Discussion by Dr. S. I. Bloomhardt

History, eight months before admission of influenza, sore throat and temperature; later, pain over left antrum. One month later, ankles became swollen; in hospital six days and her condition improved; went on a diet, but six months later, she had nausea, vomiting, diarrhea and abdominal cramps, severe frontal headaches, passed small amount of urine twice each night, eyelids became puffy, non-protein nitrogen 24, blood chlorides 632. Very poor family history. Many attacks of tonsillitis, influenza once before, eight years ago. Blood pressure 148/110 to 135/95. Urine 33 to 72 oz.; specific gravity 1002 to 1024; very large trace to slight trace of albumin at 17 examinations; sediment full of granular casts; occasional hyaline cast at another; 4 to 8 W.B.C. at both, 1 to 2 R.B.C. X-ray revealed antrum disease, periapical absorption of one tooth; three weeks later in hospital, no edema of the ankles which subsided after thyroid to get up and about and there was a slight pitting edema of the ankles which subsided after thyroid extract therapy and return to bed. One week later five teeth were extracted and one week later discharged. After two months rest, worked hard one year and four months, keeping to diet, when her ankles and face became very swollen; treatment and patched up, and again in one month swelling of abdomen and edema; entered hospital, developed a skin lesion, at one time thought to be erysipelas. Re-entered hospital with acute chest which she thought was diagnosed pneumonia. Twenty months after her first admission, again entered hospital, very edematous, tonsils missing, left antral region tender, moist rales throughout both lungs; rapid, somewhat dilated, heart; B. P. 190/120 to 90/70. Urine 68 to 47 oz.; sp. gr. 1020 to 1025, large trace of albumin at each of four examinations, sugar at each of three, hyaline casts at three, acetone and diacetic acid at each of three, last specimen loaded with hyaline and granular casts; non-protein nitrogen 23; blood cholesterol 667; blood sugar 34 mgm. Day before death, total protein 3.162 to 4.3. Basal metabolic rate minus 3; albumin-globulin ratio in the blood reversed; albumin 2.1, globulin 2.2. Massive edema of abdominal wall and possible ascites, abdomen showing uniform soft distention.

Evidently, a diffuse form of acute and then chronic diffuse glomerular nephritis, secondary to or should I say preceded and accompanied by, acute infections of the tonsils, sinuses, possible pneumonia and a streptococcal skin infection said to resemble erysipelas. Case shows edema, a heavy albuminuria at times, a slight retention of nitrogenous products in the blood, an elevation of blood

cholesterol. In an interesting study of 31 cases by Murphy, in 1927, fourteen had chronic glomerular nephritis with edema; eleven had chronic glomerular nephritis without edema, while six were cases of hypertensive cardiovascular disease with edema from cardiac failure. A few points of interest; the presence of doubly refracting lipoids found in renal epithelium and in the urinary sediment is associated with chronic nephritis and edema; they were rarely found in the urinary sediment of hypertensive cardiovascular disease with edema from cardiac failure. None of the patients having nephritis without edema had doubly refracting bodies in the urine and in none were they found in the tubular epithelium at autopsy. A hypercholesterolemia was usually found in the cases of chronic nephritis with edema, while those of chronic nephritis without edema and of hypertension cardiovascular disease usually had a normal cholesterolemia. In short, there exists an association between chronic glomerular nephritis with edema on the one hand, and on the other hand, an elevation of blood cholesterol, deposits of lipid material in the tubular epithelium and the presence of doubly refracting lipid bodies in the urine.

A group of John S. Hopkins men have studied the relationship of acute infections of glomerular nephritis, a study of 40 cases. The onset of acute and subacute glomerular nephritis was preceded or accompanied in 85 per cent by an acute infection, such as tonsillitis, sinusitis, broncho-pneumonia or scarlatina. (This unfortunate patient being studied seemed to have all these plus periapical abscesses.) Cultures made from the infections in 32 cases showed hemolytic streptococci. Ten of the cases among those that could be constantly observed apparently recovered from the attack of acute nephritis. In nine of these, or 90 per cent, the infection and the infecting organism have disappeared. Twelve cases of those who could be constantly observed progressed to a chronic stage and terminated fatally; in ten of these, the infecting organism or infection has persisted. No evidence could be obtained to show that the streptococcus caused the glomerular nephritis by actual invasion of the kidney, for blood cultures and urine cultures were negative. All the strains of the streptococci tested produced so-called toxic filtrates and it seems possible that such toxins liberated and eliminated through the kidneys might cause glomerular nephritis in patients rendered highly susceptible in some way to these toxins.

After six months, we notice thyroid therapy was resorted to for edema; this edema subsided under thyroid treatment and return to bed. This makes one suspect they are considering the case as a nephrosis. She remains under medical treatment and was comparatively well for one year and four months, when she intermittently broke down, was edematous and had secondary infections, until 20 months after her first admission, she re-entered the hospital with abdomen showing uniform soft distention, edema general, rapid heart, B.P. 190/120 to 90/70. Urine showed pronounced albuminuria and moderate cylindruria; blood no particular retention of non-protein nitrogen, an extremely high blood cholesterol, low plasma protein with inversion of albumin-globulin ratio, depressed basal metabolism, and a secondary anemia. This to me is rather typical of the clinical and laboratory pictures of a tubular degenerated kidney or a nephrosis.

In these cases of chronic nephrosis, there is almost always present and increased blood cholesterol content and reduced basal metabolism. It is felt by many that the function of the thyroid



gland is in some way concerned in the abnormal metabolic phenomena present. Epstein has pointed out some of our knowledge of chronic nephrosis is obviously derived from comparisons with myxedema. There is no evidence to show that the thyroid gland is diseased in chronic nephrosis, or that its function is subnormal, yet the amount of thyroid required to restore the metabolism of chronic nephrosis to normal is greater than in myxedema. Possible myxedema might be classed as an actual hypothyroidism and chronic nephrosis as a relative hypothyroidism. In chronic nephrosis, daily doses of one to four grams of thyroid are often required to elicit a metabolic response. If the oral administration of thyroid causes gastric distress, thyroxin is given intravenously. The fate of thyroid and thyroxin in nephrosis has not been determined.

The blood calcium is not given and it would be of interest if it were, because in such a case of edema and ascites and a reverse of the albumin-globulin ratio, an increase in blood cholesterol, the blood calcium is usually low. Also, there is no mention of parathyroid being given and since there seems to be an endocrine imbalance in these cases which varies in different patients, sometimes thyroid is effective, sometimes parathyroid. Also, it would have been interesting if some of the laboratory findings had been given following the administration of thyroid and if mention of the nature of the medical treatment during the fourteen months between hospital admissions had been made.

Christian, Peters and others doubt that such a disease as chronic nephrosis exists. They feel that it is only a severe form of the chronic nephritis with salt and water retention. Epstein, Elwyn, Moschowitz and others feel that it is a disease entity and in the outline and scholarly paper by Dr. Mills, he includes nephroses and its types; so, with this in view, and from the clinical and pathological findings just reviewed, will venture a diagnosis of mixed glomerular nephritis with nephrosis.

Diagnostic conclusions on this case, when presented before the Phoenix Clinical Club, were as follows:

**Dr. J. M. Greer:**—Endocarditis; chronic sinusitis; chronic interstitial nephritis; hypothyroidism; pulmonary edema; second admission, myocarditis with cardiac dilatation and insufficiency; no doubt a cardiac death.

**Dr. H. P. Mills:**—Lipoid nephrosis; diabetes mellitus; anasarca with terminal passive hyperemia of both lower lobes.

**Dr. F. C. Jordan:**—Chronic diffuse glomerular nephritis; nephrosis; sinusitis; terminal pneumonia.

**Dr. F. J. Milloy:**—Nephritis (tuberculous nephritis not excluded), but this is no doubt diffuse glomerulo-nephritis; superimposed on this is a nephrosis; hypertrophy and dilatation of heart; heart death.

**Dr. Victor Randolph:**—Nephrosis; chronic tonsillitis and chronic sinusitis.

**Dr. T. T. Clohessy:**—Chronic parenchymatous nephritis with the usual cardiorenal syndrome; evidently of bacterial origin; all the sequelae of nephritis.

**Dr. Fred Holmes:**—Chronic glomerulo-nephritis, with nephrosis.

**Dr. O. H. Brown:**—Glomerulonephritis; cardiac dilatation; hypertension; chronic tonsillitis; infected antra; abscessed teeth and pyorrhea.

#### PATHOLOGIC DISCUSSION

Tracy B. Mallory, M. D.

Anatomic Diagnoses: (1) Primary disease, chronic glomerular nephritis with superimposed nephrosis.

(2) Secondary or terminal lesions: Bronchopneumonia; acute pleuritis; ascites.

We were limited at autopsy to a small abdominal incision, to palpation of the organs and to removal of small pieces for microscopic examination from those we found diseased.

The kidneys were the most interesting thing. They were definitely enlarged, weighing 365 grams. When the capsule was stripped back it left a practically smooth surface. On cutting into the organ it showed a markedly pale surface of very bright lemon-yellow tinge, which made it obvious even in gross that there were large amounts of lipoid in the parenchymal tissue. Microscopic examination showed a very extensive fatty degeneration of the tubules, which is one of the characteristics of nephrosis. But it also showed a quite definite degree of glomerular involvement, rather more than is consistent with pure lipoid nephrosis. I think one would have to group the case under both nephrosis and nephritis. A certain definite proportion of cases of nephritis seem to start as nephritis, seem to progress thereafter entirely or chiefly as nephrosis. They show little or no increase in the symptoms more or less directly referable to glomerular involvement. The blood pressure does not go up, nitrogen retention is not marked. On the other hand the edema and the blood chemical changes, that is, high cholesterol and diminished proteins, suggest that the tubular lesion from that time on is the more active and important element. This interpretation of the process receives confirmatory support so far as this case is concerned from the manner of death, because a very striking number of cases of nephrosis die of pneumococcus infection. For some peculiar reason peritonitis is rather more frequent than pneumonia, usually a primary pneumococcus peritonitis.

There was a bronchopneumonia here; at least consolidated nodules could be felt on the bases of the lungs. Everywhere we found evidence of edema. There was fluid in both plural cavities. The heart did not feel enlarged. The other organs were essentially negative.

#### DYSPNEA

(Case 15331, Case Records of Mass. Genl. Hosp., from New Eng. Jour. of Med., Aug. 15, 1929, p. 331)

A Chinese restaurant manager fifty-three years old entered March 12 in extremis. His chief complaint was dyspnea. The history was given by his wife. Its reliability and completeness are questionable.

Except for nocturia for years he had always been perfectly well until five months before admission. Then he began to be dyspneic on exertion, to find that two pillows were more necessary than before, and to have edema of the ankles at the end of the day, passing off at night. After a doctor had put him to bed for two weeks and given him digitalis all the symptoms subsided and the patient returned to work, continuing to take digitalis. He had only occasional edema, slight dyspnea and a tendency to easy fatigue until fifteen days before admission, when his ankles began to swell more than usual. March 1 he vomited, felt weak and ill and had a return of dyspnea. Since that time he had been in bed. March 5, although he was in bed the dyspnea became worse and he had orthopnea. He was put on three digitalis pills a day and other medication. The night before admission he was much worse, delirious, vomited three or four times and breathed heavily, clutching at the clothing at his neck. He apparently

had trouble in seeing, as he kept complaining of his glasses.

His wife knew of no familial disease and said that he had no bad habits. His work was not strenuous, although the hours were long.

He had not been ill before in twelve years of marriage. The past history was negative.

Clinical examination showed a well-nourished Chinaman with Cheyne-Stokes breathing, restless during the periods of rapid breathing. There was questionable jaundice of the skin and sclerae. Tongue dry and leathery. Breath somewhat acidotic and ammoniacal. Throat dry. At the left base in the back there were medium moist rales, slightly increased voice sounds, no dullness. Apex impulse of the heart felt; location not recorded. Heart moderately enlarged. Rhythm regular except for a tendency to extrasystoles in runs of 20 to 40. Second sound reduplicated over the whole precordia and very loud. A loud rough systolic murmur heard at the apex and in the pulmonic area. Pulses wiry, with little volume. Blood pressure 200/160. Abdomen not distended. A slightly tender liver felt two centimeters below the costal margin. Pupils pinpoint equal, regular. Fundus examination showed moderate choking of the discs with considerable exudate; the vessels engorged; several small hemorrhages seen. The examination was difficult because of poor cooperation. Knee jerks normal. Ankle jerks not obtained.

Urine not recorded. Blood: 17,100 leukocytes, 92 per cent polymorphonuclears, hemoglobin 80 per cent, reds 6,290,000. Smear showed definitely abnormal red cells, monocytes, microcytes, tailed cells and nucleated red cells. White cells and platelets normal. Non-protein nitrogen 80 milligrams. Creatinin 2.9 milligrams.

Temperature 99.6°. Pulse 100. Respirations 16.

After a subpectoral infusion the patient was quite active. The blood pressure was 210/180. Venesection was done, but only 150 cubic centimeters of blood was obtained because of the patient's restlessness. The evening of admission he suddenly died.

#### Discussion by Dr. F. C. Jordon

The history of this case is very meagre, yet there are sufficient factors which point to heart failure probably due to hypertensive heart disease. Edema of the ankles with dyspnea that disappeared with rest in bed and digitalis therapy and which reappeared and gradually increased after he resumed his normal duties is so common in cardiorenal insufficiency that it is almost pathognomonic.

Let us first examine the heart: We find it was moderately enlarged; a loud, rough systolic murmur. Is this an organic heart disease following an earlier endocarditis with deformity of the valves or is it due to a hypertrophy and dilatation of the heart caused by hypertension? There is no history of any previous rheumatic attacks or previous attacks of cardiac decompensation. Also, you would not expect rheumatic heart disease to first occur in a patient of this age. A hypertensive heart disease is not uncommon at the age of 56 and we have two blood pressure reports of 180/160 and 210/180. These were taken the same day that he died. In all probability his blood pressure had been even higher than this and he probably had had high blood pressure for a long time. The loud systolic murmur was probably due to dilated valve rings in a failing heart.

Did he have much involvement? There were no urinary examinations made but his non-protein

nitrogen and creatinin were considerably higher than normal. He also was in a uremic state with Cheyne-Stokes breathing, was restless and in a semi-stuporous state. Sometimes we find this apparently uremic state in patients who have very little involvement of the kidneys, but have a marked edema of the brain. We are inclined to think that edema of the brain caused the symptoms rather than true uremia. Examination of the red blood cells shows an abnormal increase of red cells. This was, probably, due to cyanosis. He had a leukocytosis of 17,000 with 90 per cent polys. This we believe was caused by an infective process somewhere in the body. The common infective process in cases of cardiac failure is bronchial pneumonia and the chest findings could easily be explained by a broncho-pneumonia, passive congestion of the lungs or both. Therefore, our diagnosis is arteriosclerosis, hypertensive heart disease, some arteriosclerotic changes in the kidneys and a terminal broncho-pneumonia.

(Note:—For lack of space the general discussions by Dr. Cabot and physicians are omitted, and the summary of diagnoses given below, with the pathological discussions):

Clinical Diagnosis (from hospital record): Chronic nephritis with hypertension; hypertensive heart disease; uremia.

Dr. Richard C. Cabot's Diagnosis: Chronic vascular nephritis; uremia; hypertrophy and dilatation of the heart; chronic passive congestion of all the organs; terminal infection, probably pneumonia; anemia.

Diagnostic conclusions by members of the Phoenix Clinical Club, when case was presented before them, were as follows:

DR. H. P. MILLS: Arteriosclerotic disease of kidneys, with renal insufficiency and hypertension; dilatation of heart; cerebral arteriosclerosis and cerebral edema.

DR. J. M. GREER: Arteriosclerosis; endocarditis; edema of lungs; hepatic cirrhosis; polycythemia, moderate degree; immediate cause of death probably embolism.

DR. O. H. BROWN: Hypertension; arteriosclerosis; arteriosclerotic kidney; terminal pneumonia.

DR. V. RANDOLPH: Hypertension; arteriosclerosis, general and renal; pontine hemorrhage; terminal pneumonia.

DR. F. J. MILLOY: Hypertensive heart disease; arteriosclerotic nephritis.

DR. T. T. CLOHESSY: Chronic parenchymatous nephritis; cardiorenal disease; eye grounds and urinalysis distinctive; blood pressure characteristic.

DR. FRED HOLMES: Hypertensive cardiovascular disease, the condition being probably that of renal arteriosclerosis with renal insufficiency and chronic endocarditis; there was likely a terminal bronchopneumonia.

#### PATHOLOGIC DISCUSSION

Tracy B. Mallory, M. D.

Anatomic Diagnoses: (Primary), generalized arteriosclerosis, arteriolar type.

(Secondary), hypertrophy and dilatation of the heart; infarct of the lung; chronic passive congestion.

I am afraid I cannot entirely agree with any of the diagnoses presented, though I am not sure mine are right. On one point I agree. The man had pri-



marily arteriosclerosis. The question is in which particular organ it was most marked.

The kidneys at post mortem weighed 327 grams. That is a fairly good weight, slightly below normal but not greatly. The capsules stripped with some difficulty and left a finely granular surface, but the cortex was not greatly thinned. The arterioles were widely and diffusely involved, but there was comparatively little extension of the process to the glomeruli. I should not expect the man to show uremia from those kidneys. One other possible explanation of his cerebral symptoms of course would be arteriosclerosis in the brain, and that was found, rather diffuse, without any lesion that could have given localizing symptoms, no softening, no hemorrhage. There was an actual thrombus in one area, but it was not sufficient completely to obstruct the circulation, so that no actual softening was produced.

The heart was enormously hypertrophied and all the cavities were dilated. Except for a slight degree of arteriosclerosis there were no valvular lesions of functional significance. One of the coronary arteries showed quite marked narrowing, but not sufficient to cause occlusion.

My feeling is that it is a case of very wide-spread, diffuse arteriosclerosis throughout the body, involving the brain, kidneys and heart in approximately equal proportions.

There was some fluid in each pleural cavity, 400 cubic centimeters on the left, 200 cubic centimeters on the right. There was an infarct in the right lower lobe approximately 3 centimeters in diameter, and I think that was probably the reason for the leukocytosis.

Dr. Cabot: I do not think we differ much. Dr. Mallory's findings are compatible with our diagnosis of hypertension. He says also chronic nephritis, but that he should be surprised if it caused uremia. Chronic nephritis produces uremia, and the patient, not the pathologist, determines how much nephritis is necessary to produce uremia. With such things as this patient had, with so high a non-protein nitrogen and creatinin, with such a breath, it seems to me that Dr. Mallory must agree that it might be uremia.

Dr. Mallory: One point of interest is that a certain degree of kidney insufficiency can be produced by cardiac insufficiency of a temporary character. A man with kidneys of this type I should not expect to show renal insufficiency as long as his heart kept going. This type of vascular nephritis plus cardiac failure might result in fairly acute renal insufficiency.

Dr. Cabot: Dr. Mallory would say that the vascular condition of the brain would produce vomiting. It is hard to prove uremia. We could say that the heart gave out, thereby causing congestion of the kidney on top of some renal insufficiency due to some kidney disease. That is a good way of putting it. After having seen this post mortem should you think that he had a quite diminished urinary output?

Dr. Mallory: One can only guess as to that; but this is the type of kidney we ordinarily see in men with a large dilute urinary output, with a slight degree of inability to concentrate, but ordinarily no nitrogen retention until very late in the game. They usually die of cerebral hemorrhage or heart failure before the kidney shuts down. There are some cases of vascular disease of the kidney in which the renal lesion progresses so fast that the patients die of uremia before the secondary changes take place in the heart or brain. Those are distinctly uncommon, perhaps one to ten cases of the hypertensive type.

## CASE OF COUGH AND VOMITING

(Case 15151, Case Records of the Mass. Genl. Hosp., from New Eng. Jour. of Med., April 11, 1929, p. 779.)

Discussed by

Dr. A. C. Kingsley.

(Before Clinical Club of Phoenix)

A married American woman twenty-two years old entered May 25 for study of a chest condition. The chief complaints were vomiting and cough of two weeks' duration.

January 21, four months before admission, she was normally delivered of her second child. A report from the hospital states that the child developed gonorrheal infection of the eyes and that the mother said her first child, born two years earlier, had the same thing. There were no complicating factors in the second delivery except that she lost, the doctor told her, a great deal of blood. On returning home two weeks later she was so weak that she was unequal to any exertion and felt tired out all the time. In two months she had regained a good deal of strength. Three weeks before admission she worked very hard in moving her household goods and also got wet through in a rain. She developed a hard hacking cough, unproductive at first, but so severe that the paroxysms bent her double and left her exhausted. She began to have nausea and vomiting and could keep nothing down. She called a doctor, who found no temperature, lungs normal, and put her to bed. She stayed there three days, then got up, feeling no better. Two weeks before admission while working one evening she suddenly felt weak and nauseated. She had a prickling sensation in her arms and hands, everything turned black before her eyes and she fell unconscious. Her husband found her vomiting, very pale, cold, trembling, cyanotic about the lips, with twitching of the muscles and very rapid heart. The following day she was very weak and half asleep all the time. Following this her cough became less hacking and produced small amounts of salmon colored sputum. She now had somewhat less vomiting and could usually retain one meal a day. She continued very weak and often had mild sweats. At one of his visits the doctor said her pulse was 130 but her temperature sub-normal. A week before admission she began to have a rattle in her throat which made her respirations very noisy. She could however stop this by coughing up sputum. Her cough was less severe and less paroxysmal. She noticed that she had lost about fifteen pounds in three weeks. Six days before admission she coughed up some blood-streaked sputum. She began to be unable to sleep because of orthopnea. She had a sensation of a lump in her throat, relieved by sitting up. Since that time she got what little sleep she had sitting up in a chair. Four days before admission a consulting physician said she had some water on the right lung.

Her family history shows heart trouble in a grandfather and the death of an uncle from tuberculosis.

Twelve years before admission she had a slight illness which was called appendicitis. Two years later she had a mild case of influenza. Two years before admission, in the fifth month of her first pregnancy, she was in a hospital for study of abdominal pain thought possibly to be appendicitis. Before the birth of her first child, four months later, she had nosebleed and began to urinate once at night. This had continued ever since. Two urine

examinations in the hospital showed a slight trace of albumin and a few leukocytes. A third specimen on the day of discharge showed complete reduction for sugar; a fourth showed no reduction. The blood pressure at admission was 140/70 and at discharge 130/75. She reentered the hospital and was normally delivered. The hospital report does not mention gonorrheal infection of the eyes. The patient denied lues and Neisser infection by name and all symptoms. Since her first delivery she had slight white vaginal discharge. A year before admission she weighed 117 pounds, her best weight.

Clinical examination showed a fairly well developed, poorly nourished girl with pale skin and slightly cyanotic lips. Chest symmetrical, but expansion less on the right. Signs of a small amount of fluid at the right base. Right back dull, with medium and coarse rales at the scapular region. Left back slightly dull at the scapular region, with increased fremitus and medium moist and crackling rales. Heart normal except for a low, short systolic murmur at the apex. Blood pressure 190/140 to 112/65. Abdomen negative. Pelvic examination showed some procidentia and retroversion, with lacerated cervix and some tenderness in the vaults.

Urine: Amount normal, specific gravity 1.014 to 1.003 (at a two-hourly test 1.005 to 1.012), a slight trace to a large trace of albumin at all but one of 19 examinations; two catheter specimens showed occasional leukocytes and epithelial cells, one showed rare red cells. Renal function: two tests 0, one 5 per cent. Cultures of the two catheter specimens both showed no growth. Blood: 7,200 to 6,000 leukocytes, polymorphonuclears 64 per cent, hemoglobin 60 to 70 per cent, reds 3,500,000 to 4,300,000, slight anisocytosis, poikilocytosis and achromia, platelets normal. Non-protein nitrogen May 26, 80, increasing steadily to 270 July 12. Creatinin 5.7, increasing to 15.2. Uric acid 7.4 to 11.5. Phosphorus 8.6 to 16.2. Hinton negative. Sputum: no blood or tubercle bacilli at four examinations. Stools: guaiac strongly positive at one of four examinations, questionably positive once. Urethral and cervical smears showed no Gram-negative diplococci.

X-ray examination. The left diaphragm was distinctly seen, sharp in outline. There was some mottled dullness extending outward from the left hilus. The right diaphragm could not be made out. There was decreased radiability of the lower two-thirds of the right lung field. The border of the heart was distinctly seen. The right apex appeared normal. Another examination three days later confirmed the previous findings. The costophrenic sinus on the right was obliterated. There was mottled dullness at both lung roots, more on the right. On this side it extended outward and downward along the course of the bronchi. The interlobar septum was visible on the right. All the lung markings were thickened and beaded. The upper portion of the lung fields was clear.

Temperature normal until May 30, then elevated for five days, reaching 102°, afterwards normal except for a slight elevation to 99.6° June 13 to 15, and a rise to 102°-99.7° three days before death. Pulse 70 to 128. Respirations normal.

May 27 examination showed a shower of medium crackling rales in the left midscapular region. May 31 there were signs of consolidation in the right midlobe and part of the lower lobe, possibly with a small amount of fluid. The following day in addition to nausea and gastric instability she complained of pleural pains along the lower sides of both chests. The night of June 3 she had an acute

episode with weakness and syncope accompanied by vomiting and a very feeble pulse. The heart was rapid and regular but showed gallop rhythm. The process in the chest cleared slowly and in two weeks was practically gone. June 9 there was some edema of the face and abdomen. June 15 the blood showed a marked increase in phosphorus (13.3), creatinin (9.5) and non-protein nitrogen (140). She had some pain and redness of the smaller joints. X-ray examination June 18 showed the heart shadow prominent in the region of the left ventricle. June 22 it was thought that a rough localized pericardial friction rub was heard. There was some twitching of the muscles. The patient at no time had a true convulsion. She became increasingly drowsy. The hemoglobin fell to 35, the red count to 1,875,000. A cellulitis developed over the right buttock. The leukocyte count was 17,200. The gums oozed a little blood. July 15 the patient died.

## DISCUSSION

After reading the case history and arriving at a tentative diagnosis, I have searched for the exciting factor that the history might be complete. We have no history of scarlet fever or any other infective disorder. A supposed appendicitis years ago, also a mild influenza ten years preceding her fatal illness can hardly be considered.

Her two children developed gonorrheal infection of the eyes. However, I do not believe gonorrhea played any part in the etiology. Two years before admission, she was in a hospital suffering abdominal pain. Following this, she had nose bleed and had to get up at night to urinate. She was pregnant and the urine showed a trace of albumin. The blood pressure was somewhat high. Here, then, we find definite signs of a definite illness which later produced general weakness, cough (without marked expectoration), afternoon headaches, pricking sensation in her extremities, periods of unconsciousness with twitching of the muscles and semi-stupor, vomiting and rapid pulse. Later there was some productive cough with blood streaked sputum, dyspnea, evidence of bronchitis, small amount of pleural fluid and slight edema.

On admission to the hospital, she was found to have a systolic murmur at the apex which was probably due to beginning dilatation, as there was no previous mention made of it. Her blood pressure was variable, 190/140 to 112/65. Urine of low specific gravity; renal function only 5 per cent; moderate grade of secondary anemia; nonprotein nitrogen greatly increased as was the creatinin, uric acid and phosphorus. Stool gave positive guaiac test.

Toward the close there was some evidence of an acute process in the chest, suggesting a possible bronchopneumonia. However, as a whole, I believe the findings were those of a passive congestion; also irregular temperature, swelling of some of the small joints, pericardial friction rub, cellulitis over right buttock, suggest some infection, the source or nature of which I do not know.

The exciting cause of her fatal illness is rather obscure, possibly a complication of her first pregnancy or unrecorded infection of early life. The outcome was early forecast by the low renal function. We have at this time positive clinical as well as laboratory findings from which to make a diagnosis which is:

(1). Diffuse glomerular nephritis with probably some involvement of the tubules.



(2). Passive congestion of the liver, spleen, stomach, intestines and lungs.

(3). Dilatation of the heart.

### DIAGNOSTIC SUMMARIES

DR. O. H. BROWN: Diffuse glomerulo-nephritis; streptococcic pancarditis; chronic cardiac dilatation; hypertension; arthritis; secondary anemia; cellulitis of the buttocks; procidentia and retroversion; laceration of the cervix.

DR. FRANK J. MILLOY: Chronic diffuse glomerulo-nephritis; terminal uremia.

DR. F. C. JORDAN: Chronic diffuse glomerulo-nephritis; uremia.

DR. H. P. MILLS: Subacute glomerulo-nephritis with renal insufficiency; right pleurisy with effusion; subacute bacterial endocarditis.

DR. T. T. CLOHESSY: Nephritis with usual complications or results, cardiorenal disease with high blood pressure, pulmonary disturbance.

DR. W. W. WATKINS: History suggests non-tuberculous lung or pleural disease, heart or pericardial disease. Clinical examination tends to establish lesion of right lung and pleura. Laboratory brings kidneys into picture, while x-ray confirms right lung and pleural lesion. Diagnosis, subacute glomerular nephritis; non-tuberculous infection of right lung and pleura; terminal sepsis.

(Note:—For lack of space, the general discussions of Dr. Cabot and others are omitted, and the final autopsy findings and discussions only are given).

Clinical Diagnosis (from hospital records): Chronic nephritis; uremia.

Dr. Richard C. Cabot's Diagnosis: Chronic nephritis, probably glomerular; secondary anemia; bronchopneumonia and pleurisy, right; cellulitis of the buttock; possible acute pericarditis; hypertrophy of the left ventricular wall.

### DISCUSSION OF AUTOPSY FINDINGS

Dr. Tracy B. Mallory

Anatomic Diagnosis: Chronic glomerular nephritis; cellulitis of right thigh; atheromatosis; slight cardiac hypertrophy; fibrinous pericarditis; acute colitis.

DR. TRACY B. MALLORY: This patient did show a chronic glomerulonephritis. The kidneys were considerably atrophied, the combined weight of the two being only 130 grams. The capsules stripped with considerable difficulty, leaving coarsely granular, grayish surfaces. The cortex was so narrowed as to be barely discernible above the base of the pyramids. She had an anomaly of the pelvis and ureters on both sides in the form of a marked narrowing or stricture of the pelvis just above its juncture with the ureter. I do not believe however that it had anything to do with her symptoms or the development of the renal lesion. The process was symmetrical on two sides, and in all probability was a congenital anomaly. Strictures of congenital origin are sometimes found at the spot where the pelvis of the kidney joins the ureter.

The heart was very slightly hypertrophied. There was a slight degree of fibrinous pericarditis, and a slight colitis of the type that we usually see in uremia.

Microscopic examination of the kidneys showed

the vast majority of all the glomeruli completely sclerosed. The process was evidently so old that there were very few traces of the original stages left. The only acute lesions present in the kidneys at all were vascular ones.

She had also a quite acute type of atheromatous deposit in the aorta. The entire intima was studded with minute yellow plaques. I think that perhaps the progression in this case is to be explained by a vascular process superimposed upon a very old chronic glomerulonephritis. There seems to be no evidence that the glomerular lesions as such had been progressing recently.

The other important finding and the immediate cause of death was a cellulitis of the right thigh.

### REPORT OF THE MEETING OF THE AMERICAN COLLEGE OF PHYSICIANS

Minneapolis, February 10-14, 1930

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(Read before the Bernalillo County Medical Society, at Albuquerque, N. M., March 5, 1930.)

The first address of welcome was by Dr. Elias P. Dyon, dean of the University of Minnesota Medical School, who said he had hoped that several others would have spoken before he did; that an address of welcome was much like the old-fashioned game of "Hot and Cold." You were cold when you got away from the subject and warm when you got towards it and that he had hoped someone else would have warmed up the audience before he came on, but he said he wanted to tell us something about the Medical Department of the University of Minnesota. It first started as an Examining Board for the purpose of examining physicians who wanted to be licensed in Minnesota, that there had been several small schools in Minnesota, but they had at last all been absorbed. Now Minnesota boasted only one medical school. Their school was among the first to insist on a four year course; the first to insist on a two year college course and the first to require an internship. They also have a graduate school and do considerable research work. He said, he did not want us to confuse the warmth of their welcome with the out-door temperature.

Dr. Edward L. Tuohy, president of the Minnesota Society of Internal Medicine, stated it was a great pleasure to welcome the doctors here, and that they had decided to have the College welcomed by physicians instead of calling in, as they did in some places, the mayor, sheriff and chief of police. He thought there was getting to be quite a plethora of medical societies, so that while specialism served a good purpose, he wondered if we were not getting too many specialities. He told of a Minnesota Congressman from

one of the agricultural districts who went down to Washington and attended some state function. He saw a man decked out with a great many medals and timidly asked him what he was. His answer was "I am a Naval Surgeon," to which the Congressman responded "Gosh! how they do specialize." He said the public feels that specializing has increased the emoluments and limited activity, however, that medicine had advanced more in the last quarter of a century than in the previous four hundred years. He said that coordination of hospital staffs will make for greater progress. He also said that the American College of Surgeons had tuned up the hospitals and that he felt it was up to the College of Physicians to see that proper use was made of these hospitals. He said that of all the healing cults, the chiropractic schools are the only ones who have all their students in one class.

Dr. E. L. Gardner, president of the Hennepin County Medical Society told us he wanted us to feel very welcome to do anything we wanted to. He said if any of us wanted to fish, Dr. White would arrange to have a little ice cut out of the river so that we could go and fish; he wanted us to do the things we would like to do.

Dr. John H. Musser, New Orleans, president of the American College of Physicians, replied to the addresses of welcome. He stated he was glad to be in Minneapolis; they had a delightful climate and he wanted to compliment Dr. White on the wonderful program he had arranged. He said he would like to ask one question, how Minneapolis got his name. It seemed a little inconsistent to him to have an Indian name with a Greek root, however the College was deeply grateful for the invitation to visit and was sure we were going to have a wonderful meeting.

Dr. Ross A. Gardner read a paper on "Colloids in Medicine." He said colloids was the chemistry of films, surfaces and interspaces induced by free energy in the interspaces. He said one cubic centimeter of matter contains particles, which numbered 1 with 21 ciphers following it, and that these particles have a surface area of seven thousand feet. He stated the human body is composed of chemical matters of five groups; proteids, carbohydrates, hydrocarbons, salt, and water and other compositions of which we know very little. He said that the energy of the colloid is surface energy,—surface films in different form. He stated a liver cell contains two hundred twenty-five billions of the finest divisions. That the human body was 65 per cent water and that medusa is 99 per cent water. He said living water is dif-

ferent from water in bulk. Fever would result in a reduction of the free water and bound water in the body. That there was more bound water in the muscles of young animals than in the old. Robinson's work indicated that anesthetics and drugs produced changes in their relation of bound water, and if this work is borne out, much of our physiology will have to be rewritten. This article might be considered purely high-brow and I was much gratified to hear several professors from big universities say that most of it went over their heads, because it put me in their class.

Dr. Louis J. Pollock, of Chicago, spoke on "Cerebral Localization." He stated given centers were not located much until 1870. That cerebral localization of the chief functions are not known and that localization of injuries and diseased areas is now possible. Most tumors may now be localized. The purpose of this paper is to point out some of the points in localization by signs and symptoms. The thing is to locate them as early as possible because after we wait until the signs develop with great definiteness, we will make our diagnosis, but it will be too late to do the patient any good. He feels that imperfect observations are the cause of more mistakes than ignorance. Reflexes will help to determine paralysis in semiconscious patients. Let the arm fall; if paralyzed, it will fall freely; on the unparalyzed side it will fall slowly. Slight differences may be elicited by careful observation. The nasolabial fold when depressed, disappears on the affected side. The head rotated to one side, the eyes rotated to the other may be noted in ocular paralysis. The face in repose may show a difference. Raise the unaffected side and the affected side will be lowered and vice versa.

Dr. Walter Freeman, of Washington, "The Psychological Panel in Diagnosis and Prognosis." He started out with the statement that to know an organ is good; to know the patient, however, should be the goal. He dwelt on the relationship between the person and disease. Human nature does not admit of classification. He divided people into four types: schizoid, paranoid, cyclic and epileptoid. He stated the schizoid is shut-in and dreamy; that the paranoid is aggressive and holds a grudge; is always suspicious. The cyclic type is the fellow who enjoys himself and everything pleases him, but he is incapable of prolonged application. The epileptoid type is pedantic and has outbursts in which he may resemble some of the other types. He is usually devout and eccentric. In the evaluation of personalities we should



consider the patient as a unit. That disease is a reaction of the individual to pathological processes. That it is necessary to pay attention not only to the seed of the disease but also to the field in which the seed has fallen. The schizoid type blames himself; the paranoid blames somebody else and likes to talk of his troubles; the cyclic type has friends and hobbies; the paranoid has few and is easily depressed. He said we should rise above the stage of treating disease and treat the patient. We should study the personality and find out how the patient reacts to his troubles.

Dr. Walter C. Alvarez, of Rochester, Minn. spoke on "Gastro-Intestinal Troubles that Now Go Undiagnosed;" he stated that text books mislead us, very frequently the fellow who writes a text book would not recognize many of the diseases he describes. Thirty years from now we will wonder how it was that back in 1930 so many people with serious symptoms were classed as neurotics. In a long list of cases, that were undiagnosed, with gastro-intestinal symptoms, 77 of them were cholecystitis, 42 duodenal ulcer, 17 appendicitis, 7 gastric ulcers, two were carcinoma of the stomach, one was fibromyoma of the pylorus, one was hernia of the diaphragm, one chronic ulcerating colitis, two chronic mesenteric nodes, two infection with ameba and three were cases of inflammation in the anal region. He stated that the most common operation for duodenal ulcer was appendectomy. Many functional disorders of the gastro-intestinal tract were due to fatigue, to marital infelicity, hysteria, psychopathy, constitutional inferiority, hypoovarian conditions, gastro-intestinal migraine, allergy and constipation.

Dr. Samuel A. Levine, of Boston, spoke on "Latent Hyperthyroidism Masked as Heart Disease." In this talk he gave a history of quite a number of people who had passed from one clinic to another, being treated for heart disease, when attention to the goiter gave them relief and he stated that when the true cause of these so-called cardiac cases was recognized, they received wonderful relief.

Dr. A. C. Ivy, Chicago, gave some "Observations on the Etiology of Gall Stones." Some were perhaps caused by ascending infection of bile tract, causing stone formation. Some were perhaps non-inflammatory or metabolic and others perhaps from the existence of inflammation in the bile duct. Albert states gall stones are due to the failure of the gall bladder to absorb cholesterol. Stasis is a factor in the formation of stone, but what

causes stasis? He had proven by experiments of placing human gall stones in the gall bladders of dogs, that stones, the size of a pigeon's egg would be absorbed in three months. He had given some olive oil and others not, but the stones were absorbed at the same rate under both conditions.

Dr. Frederick Lord, of Boston, "The Significance of Atelectasis in Bronchopulmonary Conditions." He said atelectasis was of importance on account of the difficulty in diagnosis. Atelectasis may arise from encroachment as from pleural effusion, pleural air, from an abscess, or pericardial effusion. This compression atelectasis has definite symptoms, where you find diminished tactile fremitus, egophony, dullness, diminished voice, diminished whisper. Lobar pneumonia gives a minor degree of atelectasis. A foreign body will give atelectasis. Atelectasis is common; it is important and may be recognized by x-ray.

Dr. Frederick Eppelen, of Seattle, gave moving pictures of the results of the use of "Stramonium in Cases of Encephalitis for the Relief of Parkinsonian Syndrome." Parkinsonian syndrome may appear as early as fourteen years of age, but usually appears at advanced age. It sometimes begins with a tic of the tongue, tic of the lip, jaw, ocular type; however, all of them are relieved by the use of stramonium. Vegetative nervous disorders yield to stramonium, but Parkinsonian symptoms are helped better. He gave large doses, 60 minims four times a day. He found it gave more marked relief in worse cases than in mild ones. Out of 46 cases treated, 70 per cent were relieved by stramonium. The non-Parkinsonian type are not benefited. He used the U.S.P. solution, fresh, with 40 minims three times a day and increased to 60 minims; then increased to 80 minims, if necessary. If stramonium does not work, he advises the use of hyocine and scopolamine. If these cause dilatation of the pupils, he counteracts this with eserine. He had moving pictures of quite a number of cases showing both before and after treatment and his results were truly marvelous.

Dr. Geo. Fahr, Minneapolis, discussed the effect of "Generalized Arteriosclerosis upon the Heart and the Systemic Circulation." He stated that long continued high blood pressure leads to failure of the left side of the heart and coronary thrombosis; but the question is, what causes high blood pressure? He had developed an apparatus in which he passed fluids through a glass tube and the hardening of the tube in his experiments, did not raise the blood pressure; however, the changes in the lumen of the tube would raise the

blood pressure. His conclusions were that it was not the hardening of the arteries that raised the blood pressure so much as the narrowing of the lumen of the blood vessels, because in his experiments the hardening of the tube did not increase the pressure or the amount of work, but the narrowing of the lumen did.

"Some Newer Aspects in the Problem of Essential Hypertension" were discussed by Dr. Norman M. Keith and James W. Kernohan of Rochester, Minn. They stated that there was a thyroid theory; that the adrenals were supposed to have something to do with it; i.e. hypertension, metabolic causes, aneurism, paroxysms of the blood vessels, and toxemia. Their conclusions were indefinite and we all felt that they had left us where they had found us.

"Retinal Changes" were discussed by Henry P. Wagner, Rochester, who also illustrated by a number of slides showing retinal vessels.

Dr. Elliot P. Joslin, of Boston, spoke of "Arteriosclerosis in Diabetes." He stated that during the last 15 years, the average age of diabetics had increased one year yearly; that in 1920 the average age of death was forty-one and that now the average age of diabetics in his service was sixty-three and one-half years. The diabetics are now dying old and the per cent of deaths from arteriosclerosis is increasing. He stated, however, that we would all die of arteriosclerosis if we live long enough; that, in the fourth decade of onset, the number of deaths from arteriosclerosis and diabetes has doubled. With an increased duration of five years, the per cent of deaths from arteriosclerosis increased 30 per cent; ten years 40 per cent; twenty years 68 per cent. Race always has its effect; diabetes among Hebrew women is increasing more rapidly than among the gentiles. One-sixth of all diabetic deaths in patients who contracted the disease before 40 years of age, died of arteriosclerosis and one-third of those over forty years of age. Children have arteriosclerosis; they do not die of it, but they have it; calcified arteries are found in non-diabetic children. He stated, that as diabetics were now able to get along on a more nearly normal diet than they ever were before, he believed this great increase in arteriosclerosis among diabetics would be checked. In over three hundred autopsies, he found no case of diabetes of over five years duration without some arteriosclerosis. His conclusions were that old age cannot be conquered, but premature old age can. He stated that ten years ago 25 grams of carbohydrates per day was as much as a

diabetic could stand, now they are all getting from 100 to 125 grams per day and he believes that this more nearly approaching normal in the diet will help and that even a hyperglycemia at times may be a good thing for the patient.

Dr. E. T. Bell, Minneapolis, discussed the "Causes of Hypertension." Among others he mentioned hardening of the arteries and capillaries, together with narrowing of the lumen, vasomotor centers, the adrenals pressor substances, intracranial pressure, Roentgen-ray atrophy, stenosis of the renal vein, external sensory stimuli, adrenal tumors, renal disease, glomerular nephritis of eclampsia, bichlorite nephroses, polycystic kidney, urinary obstruction, degeneration of the small vessels. Dr. James L. McLester, who was to have described the treatment of hypertension was not there and we felt we did not know any more about hypertension after we had listened to them all afternoon than we did before.

Dr. Hilding Berglund, Minneapolis, "The New Possibilities in Classification and Treatment of Anemia," and treatment as we know it today. He enumerated as causes: pernicious anemia in pregnancy, in children after stomach resection associated with intestinal stenosis, lues, cancer of the stomach, von Jaksch's disease, dibothryocephalus latus, rickets, chloroses, toxic and non-toxic type. The therapeutics are arsenic, liver extract, cod liver oil and whole blood injections, transfusions.

"Curing the Ulcer Patient" by Dr. Seale Harris, Birmingham. This, he stated, did not consist of a routine diet list and stock prescription for alkalis. Lots of them receive no permanent relief from either and bad results from both medicine and surgery. Vomiting and hemorrhage are late symptoms. He believed that most cases, if diagnosed early, may be cured by a light diet and the removal of focal infections. He said attention is too often focused on the ulcer itself and not on the patient and the focus that is causing the ulcer. The first thing is to look for the cause, then remove it, and this is often a problem. Eating habits in most cases are to be corrected and faulty diet caused many troubles. He emphasized the low vitamin diet and high carbohydrates as the cause of much trouble. He said if we put them on a diet of white flour, with white rice, white potatoes, sugar, lean meat, etct., we will have trouble. The Sippy diet was a modification of Lenhart's, and also Einhorn's and Lambert's were from the same source. He also emphasized the use of orange juice and spinach and other vitamin containing foods. Tobacco should be



cut out. If any surgery was necessary it should be done by a competent surgeon. None but a well trained man should be permitted to do a gastro-enterostomy. He said it would discourage a great many amateurs if, every year, the results of all gastro-enterostomies could be published. The mistake a great many surgeons made was in turning the patient loose three weeks after the operation; they should be kept under careful observation and supervision for several months and after that a semi-annual examination will help prognosis.

Dr. Joe L. Miller, Chicago, "The History of Syphilis." Much of this is perhaps known to all of you. He emphasized the fact that syphilis was unknown in Europe previous to the return of the sailors of Columbus. That in 1495 it first appeared in Europe; first, in Spain and gradually travelled through all the countries of Europe. There is no evidence that syphilis had existed in Europe previous to that time. There is no pathological evidence among the Egyptian mummies that they were syphilitic. It first appeared in Japan in 1565. In England and Scotland they spoke of it as the French Disease; in France they spoke of it as the Spanish Disease and in Russia as the German Disease; in Italy as the Portuguese Disease and so on and so forth, each country blaming the country from which they thought it came, but he said, in fact, it should have been called the West Indian Disease as it was brought back, unquestionably, by the sailors of Columbus and was spread by the soldiers of Charles III.

Dr. Logan Clendenning, Kansas City, read a paper on the "History of Certain Medical Instruments of Precision." He first took up the watch. It was developed by Galileo; first the pendulum and with the pendulum he worked out a system of timing the pulse. The first watch was made in 1719. After this much was written about the pulse and describing the pulse of various diseases. Graves established the science of pulse counting and described the pulse in the disease that bears his name. The thermometer was also developed by Galileo. He first had a glass tube three feet long. Previous to time of the thermometer, heat was supposed to be matter, but after that, it was described as energy. The first accurate recording was made in 1850 with a thermometer made by Traube. With this thermometer it took five minutes to take the temperature. The first blood pressure was taken by an Englishman named Hale. He used a mercury apparatus. The first hypodermic was made by Francis Rynds.

"Spontaneous Pneumothorax" by Dr. F. J. Hirschboeck, Duluth, Minn. Spontaneous pneumothorax is relatively frequent and occurs more often in males. It occurs on either side and may be unilateral or bilateral. If bilateral, death does not ensue as is commonly believed. Sixty-seven per cent of spontaneous pneumothorax is due to tuberculosis; 32 per cent to empyema and bronchiectasis and one per cent to trauma. Pneumothorax is due to a rupture of the pleura. Very frequently the cause is not demonstrable and is difficult to establish.

Dr. Francis M. Pottenger, Monrovia, Calif., "The Healing of Tuberculosis." He said there was much mystery about the healing of tuberculosis. The healing of tuberculosis depended on many "different factors; the number of bacilli; the virulence of the bacilli; heredity; the resistance of the individual to disease; reaction of tissue to injury. Seasons play an important part; spring and fall are the worst time and summer is the best. Endocrines may raise the resistance. Efficiency of immunity increases or decreases as time goes on. A tremendous immunity is built up as the disease progresses. The object to be accomplished is to try to prevent the spread of the disease and build up resistance; in this rest is the most important factor and food next, fresh air, elimination of tuberculosis through the natural channels. He showed many charts and slides showing different rates of progress in different individuals.

Dr. Rhoda presented a case of a child four years old, native of Minneapolis, from whom had been removed a half dozen stones from the pelvis of the kidney. Anyone of these stones was as large as a pigeon's egg.

Dr. Platou showed several cases of children in whom he had used intra-peritoneal transfusion. He emphasized the fact that blood injected into the peritoneal cavity should be cross-matched with just as great care as if it were going into the blood stream. He stated that a rabbit was able to absorb one-fifth its own blood volume in four hours.

Dr. Julius H. Hess, Chicago, spoke on "Splenic Puncture as a Diagnostic Procedure in Infancy and Childhood." He stated a large spleen has not the significance in childhood that it has in later years. Many cases show a normal hyperplasia. He does a splenic puncture in this manner; first infiltrating the skin with novocain, then splitting the skin, pushing the needle into the spleen. He uses a needle not larger than No. 22 and with a very gentle suction, only withdrawing a few drops of blood and fluid from the spleen. He states by this method they have been able

to diagnose some cases that would have otherwise been missed.

Drs. George E. Brown and Paul O'Leary, Rochester, discussed "Studies in Certain Forms of Scleroderma." This paper was largely of pictures and slides showing some advanced cases that had been greatly relieved by a sympathetic ganglionectomy.

Dr. Leonard Rountree, Rochester, spoke on "Sympathectomy in Polyarthritis." He gave the history of a girl who had suffered six years with polyarthritis and who was relieved immediately by lumbar sympathectomy. After the lumbar sympathectomy she stated that she felt comfortable from her waist down, but that "Hell" was the only word that would express her feelings from the waist up. Later they did a cervical sympathectomy and gave her complete relief. A case of Reynaud's disease also got complete relief. He stated that in the chondroosseous type of arthritis, the operation did not offer much. The periarticular cases offered a good prognosis.

Dr. Benjamin J. Clawson, Minnesota, "The Relation of Experimental Rheumatoid Inflammation to Allergy." He stated that hypersensitive people have inflammatory rheumatism and that the experiments he has been conducting definitely showed that practically all rheumatic people are allergic.

Dr. James B. Herrick, Chicago, read a paper in "Defence of the Stethoscope." He said the x-ray man should examine all of our cases. That the stethoscope has a part that cannot be neglected. The stethoscope may discover pathology that the x-ray does not show. Diastolic murmurs tell more than the heart shadow. Palpation tells more than a picture. The electrocardiograph is a great help but only a careful history and examination will bring out all the points. These instruments are all allies and should not be considered as enemies. Formerly, much that these newer agencies tell, was found at the autopsy. While they are lazier methods, all should be used in order to bring out a complete picture. The stethoscope keeps the physician close to the patient and helps maintain the professional touch. Jumping to conclusions on a slight examination causes misinterpretation. All methods mislead you at times and only warn you that conclusions should never be jumped at. There is a tendency to underestimate the systolic murmur. They should be investigated and studied thoroughly; put all the findings together. He made a plea for the sane use of every means that may be used and said, "Don't let physical examination become a lost art."

"Rectal Temperature Curves; Normal and

Abnormal," William B. Breed, Boston. In rheumatic infections in children, fever seems to be the best index of active infection. If the temperature remains below 99.8, it is difficult to decide whether to call them active or not. Perhaps many of them were kept in bed longer than was necessary. In 4800 readings on supposedly normal children, only 26 were above 99.6. They had worked out a recording device with thermometer inserted in the rectum that would give a continuous graphic record. With this instrument, he had taken temperatures for several days continuously in order to try to determine what the normal averages of temperature are. They had been working with this for several months, but have not collected sufficient data as yet to draw conclusions, but as far as they could now tell, some normal children had a fluctuation of from one to two degrees in the 24 hour period.

Dr. James H. Means, Boston. "Resume of Our Present Attitude Regarding Iodine in the Treatment of Goiter." Iodine in goiter conclusions seems to be definite. Metabolism drops five points a day in toxic cases and much less in normal cases. It has very little effect in cases of adenomatous goiter. Geographic differences must be borne in mind. Iodine reduces the extent of thyrotoxicosis but does not shorten the disease. He stated he had never seen a case made worse by iodine nor do they become intolerant. The dose is a matter of interest; it varies in individual cases. One-half drop dose in some cases is sufficient, larger doses may not be necessary but they do no harm. The large dose used by Plummer is not necessary in Boston; however, he stated, that Plummer lived in a goiter belt and that Boston is not. He gave the uses of iodine as three-fold; to prepare patients for operation; to control the residual thyrotoxicosis after operation; and for treatment per se in mild cases. Many mild chronic cases can be handled satisfactorily by iodine alone. However, he gave this warning, that in the toxic type that has been brought back to normal by Lugols they should be operated on because the toxicity will return and you may live to regret that you did not have them operated on when you had a chance. In the mild chronic type he considered iodine as curative.

Dr. A. B. Brower, Dayton. "Unusual Addison's Syndromes." He spoke of anemia and said that Addison described a clinical and not a pathological syndrome. Syphilis of the adrenals may cause Addison's syndromes. He enumerated the following symptoms: painful asthenic adrenal insufficiency; pigmentation; hypotension; gastro-intestinal disturb-



ances; loss of weight; lumbar and abdominal pain; syncope and collapse; systolic pressure of less than 100; melanosis.

Dr. Clyde Brooks, of the University of Alabama, described the new method in the "Treatment of Pellagra." He stated that pellagra is produced by a fungus which grows in the intestinal tract of individuals in warm, moist climates; the fungi are not developed in cold climates. The treatment consists of predigested protein given intravenously every 24 hours and a diet rich in vitamins; raw liver cocktail, two cups a day. On this treatment the skin and tongue readily clear up. He further stated that in every case of pellagra the stool should be examined for parasites.

Dr. J. A. Bagen, Rochester. "Multiple Polyposis of the Colon." He stated that ten per cent of cases of ulcerative colitis develop polyposis. Whence they come and where they go is like the riddle of the Sphinx. He says there is a similarity between the intestinal polyposis and areas of hyperplasia. His idea is that these polyps are strips of almost detached mucosa, inflammatory in nature, first becoming elevated and finally pedunculated and they are not true adenomatous polyps. However, these polyps do not become malignant. These polyps tend to disappear as the inflammation subsides. Proctoscopic examination and roentgenogram give the most information. Barium enema is the best method to use. The nature of these polyps is hard to learn and their mortality is high.

Dr. Jules Hess showed pictures of children at the Cook County Hospital suffering with rabies; showing the actions of these children up to the time of death. Some of them were in convulsion up till just immediately before death. He stated that if a child had been bitten by a dog of which there was any suspicion, to give the dog a hypodermic of apomorphine. If it is a perfectly healthy dog the vomitus would be simply the food he had eaten; but if rabid, the contents would have bits of wood, parts of soles of shoes and almost anything he might have gotten hold of, in his stomach.

Dr. Leo Loeb, St. Louis, opened the Symposium on Cancer. He spoke on the "Etiology and Biology of Cancer." He stated that cancer cells were embryonal tissue cells stimulated by proliferates and ameboid movement. Various kinds of stimuli, mechanical, chemical have the same effect. If this stimulation is continued long enough it will produce what we call cancer. Pathological stimuli acting as a prolonged irritation on embryonal tissue may be transformed into cancer. Heredity is a large factor. Cancer does

not differ from other conditions which are affected both by heredity and environment. Cells carried by the blood stream establish metastases between the extreme malignant and the benign. All kinds of anomalies exist. He stated that cancer cells are potentially immortal; that cancer cells can be transplanted. Metastases are auto-transplants. Cancer cells damage tissue by abnormal production of metabolism. Many tumors can be transplanted to other animals of the same type. Antigens of lipid character have been found in these antigens and not found in human tissue, but are found in cancer tissue. He stated that there was a possibility of micro-organisms aiding in cancer production. These parasites may give off a substance that irritates the tissue and so cause cancer, but this has not been proven. It does work in chicken sarcoma but not thought to work in mammals. Sometimes stimuli, as cold, may cause cancer.

"The Nature of Heredity in Animals," H. Gideon Wells, Chicago. Study of cancer in animals will help to get started on the nature of cancer in man. Cancer in animals is the same disease as it is in man. The laws of Mendel have been proven in plants, animals and man. In most animals, the mammary gland is frequently involved. Experimental study in animals can be followed by transplantation. Transplanted cancer behaves very differently from hereditary cancer. Heredity does modify the spread of cancer. Heredity sometimes directs the location of cancer. Some mice have cancer in the mammary glands, other strains develop cancer in the lungs.

Dr. A. S. Warthin, Ann Arbor, spoke on "Cancer in Man." He stated all the work done so far has not made a very deep impression; that statistics so far amount to very little. He took four hundred histories of cancer in the Ann Arbor Hospital during the years 1907 and 1908 and found the histories only showed a family tendency in less than one per cent. He then put a special investigator to work upon these histories and was able to get a family tendency in 50 per cent. The reason for this is not a careless history, but is due to the fact that people are ashamed of cancer in their families and try to cover it up much as they do syphilis. He stated in families in which there was a tendency to malignancy, all moles should be removed. They should abstain from smoking and from irritants. He was able to trace through quite a number of his families that there was a very distinct effect from heredity, taking one side of a cancer family who married into a non-cancer family and their

offspring were free from cancer and those who married into cancer families, all their children developed cancer. He feels that by studying the histories of cancer, cancer can be bred out and that this is the only remedy that looks to him as though it gave much hope.

Dr. Francis Carter Wood, New York, "The Principles of Radiation Treatment." Treatment depends on the distinctive effect of the short wave length, a wave length of 2 Angstroms or shorter. Raying living cells causes very little immediate change unless enormous doses are given. Immunity is produced by long radiation. Tumor cells do not gain immunity by radiation. We don't know why one cell is sensitive and the other not. He cited the case of a mouse who had three tumors in her breast, in which radiation killed one but did not affect the other two.

Dr. Edward Harbinson, Woodland, Calif., discussed "Undulant Fever in California." He stated there have been fifteen hundred cases of undulant fever reported in the United States during the past three years; that it often begins with a severe pain in the abdomen and there were several cases on record in which an appendectomy had been performed. Others begin with a pain in the joints. There is a continuous fever in nearly all cases. Undulant fever comes in most cases from raw cow's milk; however, the human race presents a very high immunity to undulant fever for they found that eighty per cent of the cows sending milk into San Francisco were positive for *brucellus abortus* and *micrococcus miletensis*, which have been proven to be identical. The diagnosis is made by the agglutination test, blood culture and skin test. Vaccine treatment is the most satisfactory treatment.

Dr. W. W. Simpson, Dayton, also discussed "Undulant Fever." As there had been several cases in their vicinity he had had ample opportunity to make his observations. He stated most of their cases began with a severe abdominal pain and that in three cases the pain was so severe that appendectomy was done on symptoms before diagnosis was made. In other cases the joint symptoms predominated. He concurred in the opinion of Dr. Harbinson that vaccine therapy offered the greatest promise and his conclusions were that the closer examination of dairy herds was the way to check the spread of this fever.

Dr. Davis, Minneapolis, discussed "The Myxedema Heart." He said the first cases reported were reported by Dr. Geo. Fahr of Minneapolis. They were cured by thyroid and relapsed on stopping thyroid; however,

some cases do not return. The dyspnea does not return but the edema reappears. Herrick reported an anginal attack disappearing after thyroid. Most of these cases have a normal blood pressure. Nine cases of myxedema out of twelve had myxedema heart and all were relieved by thyroid extract. These cases were characterized by the broad, expressionless face, dry skin, dyspnea, congested liver, minus basal metabolic rate. All were relieved by thyroid and all reappeared when thyroid was stopped. He said some men have sounded a warning against the use of thyroid in these cases but the author's experiments do not warrant it. He began with one grain twice a day and increased to one grain five times a day. They should be checked up every month by a basal metabolic reading and a complete diagnosis.

Dr. J. C. Meakins, Montreal, "Tetany." Tetany has been reported at times in epidemic form. It is now a question whether it is only a sign or a clinical entity. Tetany is associated with rickets. Tetany also appears to be due to an alkalosis. Tetany accompanies chronic intestinal disorders as sprue, in which the serum calcium is low. The parathyroid hormone controls it quickly. Chronic nephritis sometimes causes tetanic symptoms. The common signs are; Accoucher's hand; Trousseau's sign, dysphagia, aphonia and spasm, sometimes so severe that it is only relieved by a general anesthetic. Quick relief may be had by the inhalation of ten per cent carbon dioxide and ninety per cent oxygen. It seems probable that there is an unexplained alkalosis with an unstable nervous system. Some of these cases seem to be a distinct clinical entity due to the extraction of carbon dioxide from the tissues. He feels that acidosis has had a great deal of attention and that alkalosis should be studied more thoroughly.

Dr. James Burns Amberson, Loomis, N.Y., discussed "Pneumothorax." He said pneumothorax in the early stages of tuberculosis would be easy; however, seventy-five per cent of tuberculars are in an advanced stage before their trouble is diagnosed. Cavities not over three centimeters in diameter may close automatically. He stated tuberculosis spreads to adjacent tissue or infection is carried by sputum or carried by lymph or the blood stream. Patients who have never had cavities offer the best prognosis; healed cavities the next and cavities that are not healed the worst. Pneumothorax is not necessary in any closed case. It gives best results where only one lung has been involved and this lung has a cavity. In hemorrhage cases, hemorrhage can be stopped immediately by



compressing the lung with gas. Most cases should be put to rest first; if they do not show improvement compress the bad lung. He said rest treatment was necessary in the first few weeks of pneumothorax work. His experience at Loomis is that three times as many cases are living after 14 years among those who were treated with pneumothorax as those that were not. The cavity should be kept closed for two years at least.

Dr. Ralph C. Matson, Portland, Ore., spoke on "Pneumolysis." Pneumothorax was a great step in advance, but in these cases where it failed, then pneumolysis would save a great many. He advised pneumolysis in those cases in which the lung is held to the costal pleura by adhesions. These adhesions are of various kinds: strings, cord, band, fan-shaped, funnel shaped and tube. The operation consists of severing these bands. He reports a successful outcome in 122 out of 206 cases.

Dr. John Alexander, of Ann Arbor, spoke of "Multiple Intercostal Neurectomy and Phrenicectomy." His paper was largely illustrated with slides and pictures and his conclusions were, without giving any figures, that by carefully selecting cases, these operations gave good results.

Dr. Philip King Brown, San Francisco, "Thoracoplasty." He stated that in the treatment of tuberculosis, if the patient was treated at the right time, in the right place and by the right method all would be well, but if, as in many cases, he was treated at the wrong time (after the disease had advanced) in the wrong place and by the wrong methods, his treatment would continue until he was dead. Cavities should be considered important and as a serious thing and that cavities should be closed by one means or another. If they do not close of themselves, then of course, try pneumothorax or pneumolysis and if all these other methods have failed the only thing left was thoracoplasty, and thoracoplasty in well selected cases, in cases that had tried the simpler methods and failed, cases that were going to die anyway unless something radical was done, was the means of saving quite a number that would otherwise be lost.

Dr. Gerald Webb, Colorado Springs, "Surgery in Tuberculosis." There was much misunderstanding about chest surgery; that frequently patients came to him and said that they had been chasing for several years and they wanted to have an operation and be done with it, meaning they would get well immediately, but he said for the best results in pneumothorax cases, they should be kept for at least three years and that after thora-

coplasty they should be kept under close observation for a long period of time. He believed that pneumolysis had led to a slight increase in the number of cases saved. Phrenicectomy was of too recent date and it was too soon to evaluate its results, but he issued this warning in regard to both phrenicectomy and thoracoplasty, that when once done it could not be undone and should not be gone into hastily. Thoracoplasty should only be done by a well trained chest surgeon. The condition of the patient, the skill of the surgeon are factors that spell success or failure. With a well trained surgeon and close cooperation between the surgeon and the chest man, these cases still need from three to five years of very careful care. Permanent cure is not greatly accelerated by these methods. The decision to submit patients to surgery must be made by a competent diagnostician.

Dr. W. E. Ogden, Toronto, "The Diagnosis of Pre-Clinical or Latent Tubercle by Caulfield's Inhibitive and the T.C.F." He stated that tuberculosis had an incubation period of from one to five years. By the study of these reactions he is able to determine several months before any symptoms develop. He said however, that interpretation of Caulfield's reaction is difficult; that immunity varies. The test is of great value in dealing with suspects and contacts. He believes that in this reaction we have a method of diagnosing pre-clinical tuberculosis two years before the first signs will show by x-ray, however, it was highly technical and can only be done by a well trained laboratory man.

Dr. C. Saul Danzer, Brooklyn, "A Diagnostic Triad in Syphilitic Aortitis." He said that syphilitic aortitis was a thing that was hard to diagnose; that very often you had syphilitic aortitis with a negative Wassermann. He gave three points on which diagnosis can be made: angina; negative carotid sinus reflex; rapid sedimentation rate. In non-syphilitic aortitis the carotid sinus reflex is absent.

### AN INTERESTING CHEST LESION

(Case history presented by Drs. Holmes, Randolph and Randolph, for discussion by the Clinical Club of Phoenix, at their regular Monday noon meeting of Jan. 20, 1930.)

#### Case History

An American lumber broker, 59 years old, came to the office Nov. 18, 1929, complaining of moderate shortness of breath and pain in the left chest.

In March, 1929, began to feel tight in the chest and noticed a shortness of breath. There was no pain at that time and no cough or expectoration. A physician was consulted who made a diagnosis of fluid in the left pleural cavity, the diagnosis on physical examination being confirmed by x-ray. The left side was so completely clouded by fluid at that time that no lung detail could be seen but the right lung showed only slight striation densities. There

were three aspirations of fluid in March and early April, the first consisting of 65 ounces. It was clear, tea colored and no organisms were found on smear or culture. A guinea pig was injected which proved later to be free from tuberculosis. He was much relieved by these aspirations and has been up and around since, although doing very little work. His strength is fair. His usual weight has always been from 133 to 135. This dropped to about 125 during his early illness but he has regained slightly, now weighing 128. There were no further aspirations from April until about November, when about 25 ounces of fluid were removed. This fluid was slightly tinged as with old blood. An x-ray was taken on Oct. 17th, 1929, on which the following report was made:

"The negative of the chest shows gross pathology involving the left lung field with heavy pleural thickening and fluid residues at the base. At the apex there is a fibrotic change of the lung structure with peripheral induration over a rather wide area. No evidence of invasion of the right lung. The heart and mediastinal shadows are slightly distorted with a degree of displacement to the right, however we would consider the pathology at the base more fibrotic than fluid."

The symptoms complained of were slight cough at times with slight expectoration usually to be accounted for by a cold, pain and tightness in the lower left chest and epigastrium, slight dyspnea, fair strength. The appetite fine, the bowels satisfactory, no night sweats, no nocturia, no palpitation.

There is no history of tuberculosis in his family. He has always enjoyed good health with the exception of frequent colds for years. He has never had a serious illness in his life.

The physical examination showed a fairly well developed and nourished man apparently in quite good health. The skin was clear, color good. Head negative. Thyroid not palpable. No glandular enlargement. Chest somewhat asymmetrical, the left side being slightly larger than the right and with limited expansion. The apex beat not felt. Right chest negative. Left chest, decreased resonance over the upper half shading off to flatness at the base with absent breath sounds and tactile fremitus over the lower half. The breath sounds over the upper third were distant bronchial. No rales before or after cough. Fluoroscopic and x-ray examination showed heart moderately displaced to the right with dense shadow over the left base. In the oblique position, some radiance of uncollapsed lung could apparently be seen between this shadow and the heart and mediastinum. There was some irregular shadow seen at the apex but imperfectly seen.

Sample of blood tinged pleural fluid was withdrawn on entrance examination and it was negative for tubercle bacilli or other bacteria. The temperature was 99.1, the pulse 120, blood pressure 160/100. Urine examinations were negative. There was no sputum for examination. He was advised to live a rather restricted life but not put to bed and advised to return if any other symptoms developed. In three weeks he returned complaining of more tightness in the lower chest and in the epigastrium. In general he felt quite good and had gained two pounds.

After consultation it was decided to remove part of the fluid and replace with air. 1400 c.c. of blood stained fluid was removed and replaced in part with 400 c.c. of air and further x-rays taken. The report showed:

"Stereoroentgenogram of this chest shows excessive amount of density along the heart border on

the right side, extending into the basal area; shadows being rather irregular in type. On the left there is pneumothorax, with some fluid in the pleural space. There is an irregular density over the apex and upper lung field, where the lung is not entirely collapsed. There is a nodular thickening of the pleura over the lateral aspect. Suggests non tuberculous lesion."

He felt so well on leaving the x-ray laboratory that he did not go immediately home as directed, but walked about for an hour. On arrival home, he felt chilly and bad and was found to have a temperature of over 100. That night developed a wheeze and exceedingly persistent cough. He lay on the right side all that night. The next morning when seen, was found to be cyanotic and quite wheezy. Temp. 103. Cough extremely annoying but no expectoration. That evening he had a severe pain, aggravated by cough, in the right anterior axillary line. Bronchial breathing and rales over this area. Temperature 102. After considerable persuasion was induced to lie on the left side. Wheezing stopped almost immediately and the cough soon practically ceased. Pain in right lower helped by tight swathe. The following day a needle was inserted in the left chest and about 200 c.c. of air removed. During the removal he started to cough and bloody fluid was sucked out into the tube. It was noted that the manometric reading was slightly positive previous to withdrawal whereas it had been markedly negative after removal of the fluid and replacement with air. He ran a stormy course, with marked shortness of breath, cyanosis and high temperature for two days. The heart action became weaker, stimulation with digitalis and adrenalin proved of no avail and he died on Dec. 14th, 1929, five days after the fluid was withdrawn.

#### Discussion by Dr. Orville H. Brown

The salient points in this history are: The patient was a male 59 years old; in March, 1929, he developed shortness of breath and full feeling in left chest. Fluid was found in left chest and withdrawn three times in March and April—65 ounces at one time. It was clear, tea-colored with no organisms on smear and culture. Guinea pig injection was negative for tuberculosis. About November 1st 25 ounces of blood-tinged fluid were withdrawn. X-ray findings showed heavy pleural thickening on the left apex. Heart and mediastinum were crowded to the right. The temperature was 99.1, pulse 120 and blood pressure 160/100. 1400 c.c. of blood stained fluid was removed about December 10th, and replaced with 400 c.c. of air. X-ray confirmed previous findings. Patient developed wheezing and persistent coughing and fever that evening. Next morning he was wheezing and cyanotic with temperature of 103 and extremely acute cough. Severe pain developed in the right anterior axillary line, with bronchial breathing and rales in this area. The right chest was strapped. 200 c.c. of air were removed from left chest with bloody fluid. At this time it was noted that the manometric reading was positive, whereas it had been negative the day before. Shortness of breath, cyanosis and temperature increased and death ensued on the fourteenth of December.

The abnormalities in this patient which brought him to the physician were his shortness of breath and full feeling in the chest. The finding of large amounts of fluid with the dislocated heart and mediastinum explain the symptoms.

Fluid in the chest may arise from a variety of conditions. In the order of the frequency they are:

1. Pleurisy. Pleurisy is caused by (a) tubercle bacilli which may be difficult or impossible to dem-



onstrate in the fluid; guinea pig inoculation, however, will usually prove their presence. Such a fluid is ordinarily straw colored and rarely blood-tinged. (b) Pyogenic organisms ordinarily demonstrated in the smear or culture. The fluid may be clear and straw colored, but will usually contain a few pus cells. (c) Rheumatic infection in children may result in bacterial infection of the pleura, causing effusion. (d) Inflammatory processes in the abdomen may follow up the posterior wall and result in suppurative abscesses which may cause inflammation of the diaphragm and the organisms be transmitted directly through to the pleura. This naturally happens more often on the right side than on the left.

2. New growths. These may be primary or secondary usually malignant. They may arise from the mediastinum, the lungs or the pleura. The fluid from new growths is usually blood stained, but is otherwise negative except that occasionally the cancer cells may be demonstrated in the sediment of the fluid.

3. Lymphogranulomata of various types may produce pleural effusion, but as a rule the effusion appears late in the course of the disease.

4. Lung emboli may be so extensive as to interfere seriously with the function of the pleura and may cause accumulation of the fluid. This is more likely to be bilateral than unilateral.

5. Bright's disease produces chest effusion in large amounts and may occasionally be the earliest evidence the patient has of his illness. The urinary findings will, however, be positive for Bright's disease and there will usually be extensive edema in other places. Ordinarily, too, the effusion occurs only in the late stage of the disease. The fluid will not usually exist in just one cavity.

6. Multiple serositis is responsible for chest effusion, but as the name implies, fluid will be found in various cavities of the body.

The evidence in this case would indicate strongly that a new growth existed in the left chest. The man's age is easily compatible with the existence of cancer. The growth might be primary or secondary. Had it been secondary there would probably be found some evidence of the origin of the growth. There is no record of any abdominal or general examination having been made. Had fluid existed in other cavities in anything like the amounts that existed in the left chest mention would have been made of it.

It seems safe then to conclude that this was a primary cancer of the left chest. The x-ray indicates that there is a thickening of the mediastinum of the left pleura and of the apex of the left lung. There seems to be no characteristics about the thickening of the mediastinum or apex to suggest new growth. The changes of the lung appear to be more of a fibrosis than of a new growth. The blood-tinged fluid is strong evidence of malignancy.

The course of events of the last few days of the man's life may only be guessed at. He probably developed a pleurisy on the right with an area of pneumonia. This was likely responsible for his fever and part of the pain in the right chest and for the wheezing.

The fact that the pressure in the left chest became positive, when it was negative the day before, without any great accumulation of fluid, suggests a right accidental pneumothorax. The acute pain may have come from pull upon adhesions or from metastases. The stormy course with increased dyspnea suggests that the idea of pneumothorax might be correct.

The diagnosis then would appear to be: (1) Carcinoma of the pleura; (2) extensive effusion of the left chest and artificial pneumothorax; (3) pneu-

monia; (4) right accidental pneumothorax; (5) crowding of the heart and mediastinum to the right previous to pneumothorax(?) on the right side.

#### Discussion by Dr. A. C. Kingsley

A man 59 years of age, complaining of pain in left chest. Moderate shortness of breath; no cough or expectoration; little or no temperature; fluid in the chest, recurring following aspiration—which is negative for tuberculosis; the x-ray findings; and no other organic findings, which went on to fatal termination within a comparatively short period of time. The fact that his physician advised "he live a rather restricted life; but not go to bed and advised to return if any other symptoms developed," also brings the thought that he was dealing with an incurable malady.

Differential diagnosis lies between acute sero-fibrinous pleurisy; aneurism of the thoracic aorta; pulmonary tuberculosis; tumor of the mediastinal glands, lung or pleura. There are other diseases which might produce effusion into the pleural cavity. However, they are too remote to consider.

Sero-fibrinous Pleurisy: At the beginning of his illness, there was no history of an acute onset. Also, had this occurred, the fluid would undoubtedly have become purulent. Consequently I am of the opinion that this was not the condition.

Aortic Aneurism: Absence of paroxysmal cough, hoarseness, marked dyspnea, tracheal tugging and of murmurs, together with negative x-ray findings, also eliminates aortic aneurism.

Pulmonary Tuberculosis: Age is beyond that at which an active tuberculosis usually develops; it was confined to one side of the chest; absence of temperature, cough or expectoration, night sweats, negative guinea pig test and the x-ray findings not those of tuberculosis, eliminates this possibility.

Tumor of the Mediastinal Glands, Lungs or Pleura: The pleural effusion becoming bloody in character, while not conclusive proof of malignancy, is enough to cause suspicion. Absence of cough and expectoration; pain and constriction; moderate dyspnea; the fluid rapidly recurring in one side of chest, following aspiration; together with x-ray findings of heavy pleural thickening with fibrotic change at the base; the distorted heart and mediastinal shadows, lead me to the diagnosis of malignancy within the left chest. The lung being collapsed, indicates the lesion was not within. Had the tumor found origin in the mediastinal glands, the cough and dyspnea would have been more marked.

Diagnosis: Malignancy arising in the left pleura, extending to pericardium and mediastinum.

Note:—All members present concurred in this diagnosis, although the point was brought out that actinomycosis of the lungs would give an x-ray picture very similar to this, when confined to one side.

#### Autopsy Report by Dr. H. P. Mills

Permission for only limited autopsy was obtained. Only left lung removed. There was consolidation at upper lobe and pneumothorax and fluid compressing lower lobe. The pleura was thickened and adherent and contained multiple dense small nodules. There was an abnormal amount of tissue structure at the lung root surrounding the primary bronchi and extending into the adjacent parenchyma. The lining of the bronchi is smooth and apparently not involved.

Sections show a new growth made up of atypical epithelium arranged in irregular gland-like formation and having the characteristic appearance of an adenocarcinoma. This extends into the submucosa of the bronchi, but not into the lumen. Sections of pleural nodules show similar cell structure.

We would consider as an adenocarcinoma, probably primary.

## REPORT OF CASE OF PERNICIOUS ANEMIA

JAMES J. GORMAN, M. D.  
El Paso, Texas

(Read before the El Paso County Medical Society, at their regular meeting of Feb. 10, 1930.)

Male, white, age 56, railroad conductor. Examined Aug. 24, 1929. Chief complaint: Weakness and loss of appetite.

In February, 1929, began to lose his appetite and was frequently nauseated. Only occasionally did he vomit. Vomitus ordinarily consisted of dark brown fluid with only a small amount of food residue remaining. Recently even the thought of food makes him sick. Occasional distention, mostly present after the noon and evening meals. Bowels are ordinarily regular but at intervals he is bothered by either constipation or loose stool. He has occasional occipital headache with radiation down the neck constant since August 21, and very severe; feels as though head would burst. Some relief obtained by sitting in an erect position. Vision is somewhat blurred recently. Has become very short of breath on any exertion. Is able to climb one flight of stairs but only with effort and feels exhausted on reaching the top. Becomes conscious of an increase in heart rate on exertion and palpitation is not infrequent.

No known foods disagree but seems to be more nauseated after taking large amounts of fluid. During the past three months has been very irritable. Loses his temper very easily. At times memory seems rather hazy. Since July has had dizzy spells and fainted once. At other times seems to be mentally unbalanced, gets out of bed during the middle of the night and gropes around looking for his clothes and has a feeling that he does not know where he is. Sleeps poorly and has frequent nightmares. Since August 1, has had occasional tingling in the tips of the fingers.

During this attack and in previous attacks has noted a pale yellow color to the skin and sclera. Weakness has progressed rather rapidly since July. Lost 12 pounds since February 1929. Has been unable to work for six weeks account of weakness.

Has a recurrence of symptoms lasting over a course of three to four months for about four years. Present attack is similar to previous attack but is more severe, of longer duration and additional symptoms have appeared.

P. H. Essentially negative except history of having received medicine in the vein in 1900 for what was said to be probable lues.

Phys. Exam. Patient is well developed and nourished, five feet and ten inches high, weighing 156 pounds. Subcutaneous fat flabby. Skin has pale yellow tinge. Pupils react to light and accommodation; sclerae have yellow tinge. Four teeth in poor condition; others in need of attention; gums pale; tongue smooth. Lungs show slight tenderness over the right quadrant and just below right median center; liver dullness apparently diminished. Reflexes hyperactive. Romberg negative.

Temperature 99; pulse 88; B. P. 128/76. Blood Wassermann negative. Stool examination showed undigested food present; otherwise no abnormalities. Gastric analysis showed no free hydrochloric acid at thirty minutes, forty-five minutes or one hour; combined acids, 10 at thirty minutes, 12 at forty-five minutes and 13 at one hour; total acidity same as combined. About 100 c.c. contents withdrawn

which appears as a homogeneous jelly-like mixture. Bread taken as a test meal showed no apparent digestion. Gall bladder drainage showed no abnormalities. Urine examination negative. Blood: hemoglobin 60; red blood cells 2,420,000; white cells 6,500, polynuclears 68, small lymphocytes 29, large mononuclears 1, eosinophiles 1. Color Index plus 1. Red cells showed marked anisocytosis and poikilocytosis with macrocytes, microcytes and pear-shaped cells present. No achromia.

Diagnosis:- Pernicious Anemia.

Treatment consisted of a diet based on about 3000 calories daily, containing two pounds of fresh liver, fresh fruits, meat, five and ten per cent vegetables. Potatoes, cereals, milk and similar foods were limited, and fats and very sweet foods were reduced to a minimum. A five meal diet was at first prescribed with exact amounts ordered. In addition, dilute hydrochloric acid in a pepsin mixture was given during the three main meals. Teeth were given attention.

On Sept. 26 patient felt much better. Color of lips and gums definitely improved. On this date, modified Blaud's pills were given in addition to previous medication.

Blood examination on Oct. 8 showed hemoglobin 80; red cells 4,400,000; white cells 7,300, polynuclears 70, small lymphocytes 23, large lymphocytes 4, eosinophiles 3; color index minus 1; red cells showed very slight irregularity in size and shape.

Returned to work on Oct. 14. Felt very well but tired somewhat easily. Has gained five pounds in weight. On Oct. 29 color was no longer yellow and numbness was not present.

Blood examination Dec. 13 showed hemoglobin 90, red cells 4,700,000, cells normal in size and shape.

Patient has continued on diet as prescribed except that amount of food is now taken approximate except for liver which is still weighed. Liver extract was tried but patient prefers fresh liver. He has worked steadily and feels fine and does not tire except on excessive work. Symptoms have entirely disappeared.

**A TEXT BOOK OF SURGERY.** By W. Wayne Babcock, M.D., F.A.C.S., Professor of Surgery and of Clinical Surgery in the Temple University, Philadelphia; Surgeon to the Samaritan Hospital and to the American Hospital for Diseases of the stomach. Octavo of 1367 pages with 1050 illustrations, 9 of them in colors. Philadelphia and London: W. B. Saunders Company, 1928. Cloth, \$10.00 net.

The author has covered the entire field of surgery in the one volume of 1367 pages. The book is a shade over two inches thick and is easily handled. The publishers have used an excellent grade of paper. The numerous cuts are introduced directly in the text so they add no excess bulk to the volume.

The author has a terse understandable style of presenting much in little space. He presents his subject as a precise and exact science. In his preface he says: "The student or physician who reasons 'Why learn today what tomorrow may prove wrong? Why strive for exactness when the most learned are often in error?' not only loses his usefulness in a progressive profession, but lays down the torch of progress bequeathed to him. I have, therefore, written in a dogmatic vein what practice and study have made me believe is true today."

This is a book of such practical value that every general practitioner and every surgeon will wish to have it on his desk.

O. H. B.



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## NEW MEXICO STATE MEDICAL SOCIETY

The forty-eighth annual meeting of the New Mexico Medical Society will be held on June 4, 5 and 6, at Raton. Program will be published in our May issue.

Raton is one of the many beauty spots of New Mexico and will, no doubt, draw a very excellent attendance. From year to year we are impressed with the number and variety of beautiful settings for this New Mexico meeting. In Arizona the cycle is confined to five centers, but New Mexico seems to be able to find a new place every year, and each one appears a little more attractive than the previous location.

### DR. JAMES ANDREW KETCHERSIDE

In the death of Dr. James A. Ketcherside, of Yuma, on February 18, there passed the second member of a family of practitioners well known in Arizona and the southwest, a father and two sons.

Dr. E. B. Ketcherside, the father, also practiced at Yuma for many years, and those older members of the Association who enjoyed the privilege of his acquaintance will always remember him as a typical and lovable representative of the old school practitioner.

Dr. James A. Ketcherside was born in 1874, being fifty-six years old at the time of his death. He was a graduate of the University of Tennessee Medical College, at Memphis, in 1893, and practiced in Arizona practically all of his professional career. He was at one time superintendent of the State Hospital in Phoenix. During recent years he was a sufferer from angina pectoris which prevented his engaging in very active practice; this affliction eventually caused his death.

The surviving brother, Dr. Hilary D. Ketcherside, is practicing in Phoenix.

## BEWARE OF SUPPOSED NARCOTIC ADDICTS.

There seems to be a determined effort on the part of narcotic inspectors and their agents to "frame" any susceptible member of the medical profession who can be reached. The lengths to which these gentry are going to "get something" on the doctors is astounding. For example, a reputable physician of Phoenix was called on the phone by some man who stated that he was speaking for the United States attorney's office; that a man with far advanced tuberculosis and the morphine habit wished to go from Phoenix to some point in Texas; that this federal officer desired this doctor to give the addict a prescription for morphine. Fortunately, this particular doctor was conscientious enough to insist on satisfying himself regarding the supposed patient's physical condition, and found that he had no manifest tuberculosis. He, therefore, refused the prescription. Needless to say, had he given the prescription, he would have received one of the characteristic communications from Denver, to the effect that he had violated the Harrison Narcotic Act, and suggesting that he offer a cash compromise. There are addicts travelling over Arizona who can simulate kidney colic, with collapse, cold perspiration, muscular rigidity, and even bloody urine when necessary; on at least two occasions typical pulmonary hemorrhage has been simulated. The only safe procedure, under the present conditions, is to PRESCRIBE NO NARCOTIC AT ALL for any casual patient, either in your office or on call. Break this rule one time and you are inviting trouble. Dr. Whitmore was framed by narcotic inspectors in just some such fashion as that attempted on the Phoenix physician. Dr. Whitmore was so honest that he never suspected such contemptible duplicity would be

possible, until too late. Any physician in Arizona can suffer the same fate as Dr. Whitmore, unless he is scrupulously careful to prescribe no narcotic for any one except his own patients being treated continuously by him for a known ailment. Even then he is not entirely safe.

### CANCER RESEARCH AND TREATMENT

Medical men in the southwest are much interested in the Coffey-Humber "treatment" for cancer, as the general medical profession speak of it, although Drs. Coffey and Humber have been careful to insist that the whole matter is in the experimental and research stage. Unfortunately, the confidence of thoughtful members of the profession was shaken by the ill-advised newspaper publicity for which friends of the doctors mentioned was responsible, and which appeared in the papers without the knowledge and consent of Dr. Coffey and his immediate associates.

Little has been announced through the legitimate channels of medical research, and so far as can be ascertained by conversation, the discovery that the cortex of the adrenal gland would influence the growth of malignant tumors was accidental. An accidental discovery of such a nature would hardly seem to be sufficient to lead to its application to clinical practice, until the reasons for its effects had been worked out. This may have been done, but if so, it has not been announced to members of the profession who are being permitted, if not invited, to send patients for experimental treatment to clinics in San Francisco and Los Angeles. Something more definite and positive than clinical changes in tumors, even up to their complete disappearance, must be furnished before the critical medical profession will accept any biological "treatment" of cancer as established. The method of approach to the problem followed by the conscientious research worker should be as different as possible from that adopted by the charlatan. The conception of an "idea," its application to clinical conditions, and the pointing to clinical results as scientific proof, represent the path of the twilight zone worker, Koch, of Detroit, can cite clinical cures by the dozen. The friends of Drs. Coffey and Humber know so well that they are working conscientiously, dealing fairly with patients, the medical profession and medical science, that we "view with alarm," as the politicians would say, premature announcements and newspaper publicity.

### CANCER EDUCATION NEEDED

That even the educated layman can hardly distinguish between the legitimate medical advisor and the cancer quack is borne out in the daily experience of every physician. A case in point. An otherwise intelligent woman in Phoenix developed a lump in the breast. A friend of hers, just as intelligent in all other lines except discriminating about treatment of diseases, had had a lump in the breast removed several years ago by a notorious cancer quack in Los Angeles, whose office is on East Vernon Avenue. This lady with the recent lump, after consulting three competent medical advisors, two of them friends of many years, all of whom advised the surgical removal of this lump and examination to determine whether or not it was cancer, discarded all this medical advice, and placed her fate in the hands of this quack who was entirely unknown to her up to this time. He made a cross incision through the lump and plastered caustic paste into the wounds. If there is anything in pathology at all, and this lump is carcinoma, he could not have done anything more certain to disseminate the growth. This quack, like all quacks, founds his success on the law of probabilities in human disease. Sixty per cent of lumps of this type are not malignant, and these will get well, after much suffering and with much scarring. All of these will be living advertisements of cancer "cures." The forty per cent who do not get well will soon be dead and their voices silent. This diatribe is directed at no one in particular, but illustrates one of the many difficulties in reducing the mortality from cancer. If this lump is not cancer, this patient will survive and be a perpetual "booster" for this quack. If it is cancer, she will die, because it has been disseminated, and the proof of malignancy will do her little good. In either event harm has been done to the advancement of medical science, and that perhaps is the real reason for our irritation over this incident.

### ARIZONA STATE MEDICAL EXAMINING BOARD LICENSEES.

The regular quarterly meeting of the Board of Medical Examiners was held in Phoenix on April 1 and 2, with entire membership of the Board present. The following physicians were licensed to practice medicine and surgery in the state:—

DR. MARTIN C. FLOHR, Phoenix, Ariz., graduated from George Washington University, 1929. Dr. Flohr is the resident physician at St. Joseph's Hospital in Phoenix. Licensed by examination.

DR. NATHAN D. HIGHTOWER, Phoenix, Ariz., graduated from Howard University School of Medi-



cine, 1921; formerly located in Los Angeles. Licensed by examination.

DR. WILLIAM B. THOMPSON, Tucson, Ariz., graduated from Queen's University Faculty of Medicine, 1929, former residence Kingston, Ont. Licensed by examination.

DR. WM. JEWELL SMITH, Morenci, Ariz., graduated from Northwestern Univ., 1929; former residence Gainesville, Tex. Licensed by examination.

DR. ARCHIBALD SINSON, Hillside, Ariz., graduate of Columbia Univ., 1924; former residence Elizabeth, N. J. Licensed by reciprocity with New Jersey.

DR. FRANK W. CORNWELL, Hot Springs, Ariz., graduate of New York Homeopathic Medical College, 1900; former residence Plainfield, N. J. Licensed by reciprocity with New York.

DR. BASIL G. CARSON, Grand Canyon, Ariz., graduate of Indiana University School of Medicine, 1924; former residence Englewood, Colo. Licensed by reciprocity with Indiana.

DR. VERNON L. MAHONEY, Tucson, Ariz., graduate of College of Physicians and Surgeons, Baltimore, 1915. Licensed by reciprocity with West Virginia.

DR. CLARENCE J. LATTA, Sterling, Colo., graduate of Denver & Gross Medical College, 1902; former residence Portland, Ore. Licensed by reciprocity with Oregon.

DR. PAUL M. RYERSON, Chicago, Ill., graduate of Rush Medical College, 1927. Licensed by reciprocity with National Board of Medical Examiners.

DR. DAVID E. NELSON, Brainerd, Minn., graduate of Chicago College of Medicine and Surgery, 1909. Licensed by reciprocity with Illinois.

DR. ROBAR D. WALTON, Lynwood, Calif., graduate of George Washington University, 1916. Licensed by reciprocity with Washington.

## PERSONALS AND NEWS

DR. VERNON KENNEDY, of Phoenix, has returned from a sojourn in the Mayo Clinic, where he went for advice regarding duodenal ulcer. He was advised to continue on dietetic and hygienic regime.

DR. and MRS. HARLAN P. MILLS, of Phoenix, will sail from New York on May 14th, in the group composing the European Assembly of the Interstate Postgraduate Association of North America. The Assembly this year will visit Hamburg, Prague, Munich, Oberammergau, Vienna, Venice, Rome, Naples, Florence, Milan, Lucerne, Zurich, Berne and Paris. Information comes indirectly that DR. and MRS. R. D. KENNEDY of Globe will be included in this same Assembly group, this year.

DR. VICTOR RANDOLPH, of Phoenix, visited the California Tuberculosis Sanatorium Association, at Merced, early in April, where he presented a paper.

Beginning this year the American Association for the Study of Goiter will award a cash prize of \$300 annually for the best original thesis dealing with some phase of the goiter problem. These should be submitted by June 1, to Doctor Walter M. Simpson, Chairman of the Essay Committee, Miami Valley Hospital, Dayton, Ohio. The award will be given immediately following the coming meeting of the Association which is to be held in Seattle, Washington, July 10-12, 1930.

## EL PASO COUNTY MEDICAL SOCIETY

March 10, 1930

Meeting called to order at 8 p. m., by the president, Dr. Paul Gallagher. There were 54 members and one visitor present.

Reading of the minutes was dispensed with by order of the president.

The first paper of the evening, entitled "Paget's Disease of the Nipple," was read by DR. W. W. WAITE. He stated that it was a rare form of carcinoma and that very little exact information about it is available in the literature. Usually attacks the nipple or adjacent region, but may occur on the skin of any portion of the body. Next to nipple the penis is most frequently involved. It starts as an itching eczematous condition and spreads very slowly, years elapsing at times before it gets large enough to attract notice. There is some induration of the skin and a definite tumor may develop. This tumor may be connected with the primary growth or may be located in some remote part of the body, behaving in this way like a sarcoma. Usually develops after middle life. The characteristic cell is large rather pale staining, with large visculated nucleus. Its origin is in dispute. Until one has a chance to study early cases, the true nature of the condition will probably never be unravelled. He then reported three cases seen in the past several years. The primary growths resembled typical epithelioma of the prickly-cell type, but the metastases looked more like lymphosarcoma. He believes the condition to be very slow developing skin cancer.

Dr. Leslie M. Smith discussed the paper and stated that in 75 per cent of these cases there is an underlying adenocarcinoma and should all be removed. He stated that he did not believe that there was such a thing as extra-mammary Paget's.

Dr. Waite, in closing the discussion, said that he could not agree with Dr. Smith in either statement, as one of the cases presented was not adenocarcinoma, but admitted that there might be different types. He said that Hazen was the authority in speaking of extra-mammary cases.

The second paper was a report by DR. T. J. McCAMANT on the recent smallpox epidemic. As this paper was not turned in to the secretary, no abstract of it could be made. It was discussed by Drs. Waite and Outlaw.

The third paper was a case of Prostatic Calculi, by DR. A. W. MULTHAUF. M. G., age 61, cat-telman. Complaint: Suprapubic discomfort. Draining perineal sinus. Pain in back.

Past history: Had gonorrhea at the age of 18, of about seven years duration. Had operation for repair of right hernia at age of 40. Had complications resulting in the secondary opening of the incision. Had to be cathetrized for a period of ten days. Catheterization was very difficult and could only be accomplished with metal instrument. Following discharge from hospital, patient developed bladder irritation, chronic in nature, which was somewhat relieved by an advertised medicine which he has been taking a greater portion of the time up till admission.

Present illness: About two months ago patient developed chills and fever which lasted for about 72 hours. This was accompanied by perineal discomfort. Three days later, patient became aware of a swelling in perineum to which he applied hot compresses and which finally opened, discharging pus and urine. Urination for the past 5 to 6 years has been very difficult. Stream very small and frequency very marked. Pain in back has been present for many years.

Examination: Temperature, pulse normal. Blood pressure 160/110. Tenderness on palpation over both kidneys. No pain along course of ureters. Suprapubic palpation produces marked discomfort. Penis slight mucopurulent discharge; smear shows no intracellular diplococci. Urethra indurated in

several areas on palpation. Scrotal contents negative. Examination of the perineum reveals a sinus opening to the left. Pus and urine are draining from it. Attempt at voiding with finger over opening results in a few drops of urine appearing at external urinary meatus, demonstrating patency of urethra. Rectal examination shows a prostrate broader than normal, indurated, bound down along its outer border by adhesions. The surface markings cannot be made out. There is an intervesicular induration as far as the finger can reach. The gland has a crepitant feel on palpation, suggesting the presence of multiple prostatic calculi. The urethra could not be explored with the bougie a boue on account of multiple strictures, smaller than a 10F. Filiforms were passed after a prolonged attempt. Three of them were finally passed to bladder and held in place with adhesive. Flat x-ray was taken of pelvis; sinus injected with bismuth; plate verified the findings on rectal examination and also disclosed the presence of a large vesical calculus. On account of the long standing urinary obstruction, a kidney deficiency was suspected but phthalein determination was difficult and by no means accurate. It was carried out and showed the presence of a trace of dye after 15 minutes. A suprapubic cystotomy was done under local anesthesia and a bladder calculus was removed about the size of a hen's eggs. The internal urinary meatus was stretched and a V-shaped piece was excised from the vesical neck permitting the easy introduction of the finger into the posterior urethra where several small calculi, that had ulcerated through the mucous membrane, were removed. Patient was put to bed on forced fluids. Discharged from hospital with Pezzer catheter in place at end of ten days. Urethral strictures were now dilated and up to date a number 12F can be passed. Patient is still draining a small amount from suprapubic incision. Perineal sinus is healed and with finger over suprapubic opening, patient is able to void per urethram with good force and fair stream.

Diagnosis: 1. Multiple prostatic calculi. Vesical calculus. 2. Multiple urethral strictures. 3. Perineal sinus following spontaneous ruptures. 3. Periurethral abscess.

Prostatic calculi are frequently encountered in prostatic surgery. They may be either single or multiple. It is my opinion that the majority of cases are seen in chronically infected glands. There is nothing pathognomonic in the symptoms presented. The diagnosis is sometimes possible by crepitation noted on palpation of the gland, but is most frequently noted on the x-ray examination.

The case was discussed quite thoroughly by Dr. K. D. Lynch, who thought that this was evidently a case of true prostatic calculus. In his experience many of these cases have not been associated with chronically infected glands. While Dr. Young advocates the perineal route he himself prefers the suprapubic.

After disposing with the scientific part of the program, a general discussion was precipitated by Dr. Waite about the coming Southwestern meeting which is to be held here this year. This discussion was participated in by Drs. Cathcart, Gallagher, W. L. Brown, Prentiss, Miller and Waite, and bore upon the following points: The time for holding the meeting, the character of the meeting, whether or not a registration fee should be asked and the appointment of the various committees needed. It was the consensus of opinion that the executive committee of the Medical and Surgical Association was the proper body to decide what type of meeting was to be held and on motion by Dr. F. P. Miller, Dr. Waite, as member of that committee was instructed

to confer with the rest of the members and to report back at our next meeting their wishes in the matter. After a good deal of discussion, the motion was put to a vote and carried. As to whether a registration fee should or should not be charged, it was decided that this could be better determined after finding out the character of the meeting. On motion made by Dr. Swope, November 6th, 7th and 8th, were the dates set for holding the meeting, provided it was found after consulting the chamber of commerce that these dates did not conflict with any other meeting. It was brought out that the president of the County Medical Society where the meeting was to be held was the one who appointed the different committees. The president then appointed Dr. W. L. Brown, as chairman of the program committee. The personnel of the other committees was to be made known later.

Under miscellaneous business, Dr. Egbert made a plea for contributions to support the six months radio program adopted by the society last year. He stated that the committee had its hands full in arranging the programs without having to go out and solicit funds. But few of the members had paid the \$6.00 requested. He then reported how the programs were carried out. He said he did not know how much benefit was accruing from this work to the public and to the society, but he did know that it was creating quite a commotion among the cultists. Dr. McCamant, another member of the radio committee, said that chiropractors and Christian scientists had standing offer with both radio broadcasting stations here to go on the air, but that these stations would not consider these offers as long as we availed ourselves of their services. On motion made by Dr. McCamant, this report of the Radio Committee was accepted by the society.

Dr. McCamant then introduced a resolution endorsing the candidacy for Congress of Honorable Robert Ewing Thomason, our present mayor. On motion made by Dr. McCamant, this resolution was adopted unanimously.

An application by Miss Mary Hammond, of Fort Worth, Texas, for position as physician's office assistant was read.

The president then stated that Col. Moncrief requested that the society hold one of its meetings in April, at the Beaumont Hospital. As there was no objection to this, he said he would announce the date later.

The applications for membership of Dr. D. G. Arnold and Dr. J. Mott Rawlings, were then read. On motion of Dr. J. A. Rawlings, these applications were unanimously accepted.

Dr. Turnbull, a visitor from Pittsburgh, Pa., was then introduced to the society.

There being no further business the meeting was adjourned at 9:30 p. m.

S. H. Newman, M. D.  
Secretary-Treasurer.

## EL PASO COUNTY MEDICAL SOCIETY Special Meeting March 12, 1930.

The purpose of the meeting was to hear DR. H. E. ROBERTSON, Professor of Pathology of the Mayo Foundation and head of the Department of Morbid Anatomy of the Mayo Clinic, conduct a clinical pathological conference.

The meeting was called to order by the President at 8 p. m., there being 42 members and two visitors present.

After being introduced to the society, Dr. Robertson stated that he was not here to tell any of us our duty in regard to postmortem examinations, but to discuss with us purely fundamental problems in



these examinations. this discussion to come under four headings:

(1) The relation of the postmortem examination to the doctor himself. We do not have more of them because the doctor himself does not want them. This is due, not to the doctor being afraid of facing his mistakes, but because they know the conditions that often surround such examinations and those conditions are not such that he wants to contemplate. They are not the pathologist's fault, however, but are due to his inadequate facilities. Many clinicians are eager to learn the results of autopsy findings, but are themselves unwilling to attend. We do not like to ask of our friends that they submit their loved ones to these conditions and so a large proportion of these autopsies are conducted on the poorer classes. There is no question but what the greatest benefit is derived from autopsies on the more intelligent class for these are the cases that have the better clinical data. More of this class would be available if we would better the conditions surrounding postmortem examinations. If the room was as clean and neat and orderly as the operating room, and the doctors came in on tiptoe, removing their hats and refraining from smoking, and walked out quietly again, and no blood was spilled, etc. (just as you would expect in a surgical operation), things would then take on a different aspect and the gruesomeness of the thing would be done away with and be raised to a higher plane. Then we would be able to ask for autopsies without any tinge of conscience.

(2) The relation of postmortems to the undertaker. The undertaker instinctively avoids having an autopsy for, among them, it has been handed down from generation to generation, to look out for these doctors and their autopsies. But this is an unfounded fear if the autopsy is done as it should be and if the undertaker has had a little training. In Minneapolis, which has the highest percentage of autopsies in the country, a school has been established for undertakers wherein they are taught to take care of the body after it has been posted. As a consequence, the doctors receive the whole-hearted cooperation of these undertakers. They never go beyond a specified technic without their consent.

(3) Relation of postmortem examinations to relatives of the deceased. We must remember that relatives granting permission for these examinations are doing a self-sacrificing act by overcoming their natural prejudice; they are doing it for the good of humanity. We owe something to these relatives and so are in duty bound to go and tell them of anything found that might have been of importance and have some bearing on themselves. They readily absorb the facts worth while to them and to their children.

(4) Relation of postmortem examinations to our colleagues. In assuring the relatives that the postmortem is done for the furtherance of humanity, we have not fulfilled this promise until we have made known to our colleagues the things we have found during the examination that would be of benefit to them in their practice. This is probably best done at staff conferences.

Dr. Robertson then proceeded to show by example how a clinical-pathological conference might be held. He demonstrated two cases. The entire history, clinical data, gross specimens and microscopic slides were projected on the screen by means of a lantern. One was a case of carcinoma of the cervix, complicated with acute yellow atrophy of the liver, due to atophan poisoning, and the other was a case of Hodgkin's disease with amyloid degeneration in the kidneys and spleen.

In discussing the lecture Dr. Waite wanted Dr. Robertson to know that the doctors here did not share the abhorrence for postmortem examinations that Dr. Robertson seemed to think was general throughout the country. This was probably due to the absence here of those gruesome scenes. To bear out his statement he called attention to the fact "that of all the doctors who have died here in recent years, probably more than half of them had been posted." He thought we had gotten a long step in advance of the conditions described by Dr. Robertson and ventured to think that if all our postmortems were tabulated, we would have as good or even better an average than Minneapolis.

Dr. Turner stated that he was glad that Dr. Robertson saw fit to come here and give us this talk. He did not think that the postmortems as conducted here were particularly gruesome. But he did think that the attendance at them could be improved and that more benefit could be derived from them if the clinical side was presented at the time.

Dr. Gallagher wanted to know how Dr. Robertson had succeeded in having the undertakers consent to autopsies before embalming. He said that one reason against it out here was the custom of burying our dead between 24 to 48 hours after death.

Dr. W. L. Brown expressed himself as mighty well pleased with the paper and as something entirely different to what we have been accustomed. He thought it would serve as a wonderful stimulus for more postmortems.

Dr. Rigney thought that the Medical Society, by going about it in the right way, could educate the public to the point where there would be no opposition when a postmortem examination was requested. At the present time he thinks they are justified in opposing it, due chiefly to the exposed manner in which corpses are kept in the morgues. He thought it quite important to bring back to your colleagues information gained from these examinations, but was not so sure as to the wisdom of imparting this information to the relatives of the deceased, as it might at times end up in lawsuits.

Dr. Werley said that in the past six years there had probably been a thousand or more autopsies performed here. He said that the amount of benefit derived from such an examination depended directly on the amount of work you had put in on the case. Also, on this usually depended whether or not you obtained permission for the examination. If the family saw that you were vitally interested in the case, then when something went wrong and the patient died despite your efforts, their curiosity would be aroused as to what had happened and they would often want an autopsy themselves. He wanted Dr. Robertson to know that we had a clinical-pathological society here and that it had a projectoscope for microscopic slides.

Col. Moncrief stated how he had enjoyed the evening and told how interested they were in postmortems at William Beaumont Hospital. There they do not have to obtain permission from men in the service, but do for war veteran patients. This, however, is not usually difficult. He would like to know, though, how they had succeeded in obtaining the whole-hearted cooperation of the undertakers in Minneapolis.

Major Hall was in thorough accord with Dr. Robertson's paper.

Dr. Robertson, in closing, said that it was much more satisfactory and easier, of course, to conduct a postmortem examination on a body before it was embalmed, but one on an embalmed body was better than no postmortem at all. The embalmers have been taught how to arrange the body and embalm

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it. They have found that they can make a much more perfect embalming job after such an examination than before, chiefly on account of the cavities being emptied. The ancient Egyptians had found this out and practiced it. He said that during the examination, the different vessels were picked up and tagged and in that way the embalmers knew just where to inject.

There being no further business, the meeting adjourned at 9:15 p. m.

S. H. NEWMAN, M. D.,  
Secretary-Treasurer.

## EL PASO COUNTY MEDICAL SOCIETY

Meeting, March 24, 1930.

Meeting called to order by the president, Dr. Paul Gallagher, at 8 p. m. There were 40 members and two visitors present.

Reading of the minutes of the previous meeting was dispensed with by order of the president.

Clinical cases were then presented, the first one by Dr. A. P. Black. This was a case of achrodydia in a six months' old baby. Normal birth, weighing 8 lbs. First tooth erupted at five months and the second at 5½ months. Was breast fed up to 2½ months of age. Then he became very fretful and mother concluded her milk was not agreeing with him, so she took him off the breast. From then on he was put on various formulas but lost in weight and became more irritable. When 3½ months old, developed a mild injection and on the fourth day of the illness erupted with a morbilliform rash all over body. But it evidently was not measles. After the appearance of this rash the mother noticed that his hands and feet were intensely red and moist and about this time he started chewing his fingers and twisting and squirming. Kept losing in weight. He was seen by Dr. Black about a week ago. The baby was then a picture of misery and presented an extensive miliary eruption over the body, less on the limbs. There was an intense redness of the palmar and plantar surfaces of the hands and feet, extending about to the wrists and ankles. Had a blepharitis, photophobia, and mild conjunctivitis. The heart showed a tachycardia. The leucocytes were 16,700, with 62 per cent monos, mostly small.

Dr. J. A. Rawlings stated that he had never seen a case before to his knowledge. Up to the last five years there was nothing concerning it in pediatric literature. Thier, of Switzerland, spoke of it as a negative neurosis. After once seeing and studying a case it should be easily recognized in the future.

Dr. J. Mott Rawlings stated that he had seen two cases, both of which had gone on to autopsy, one of which he had performed himself. He said that the pathology was rather disappointing. Save for the marked discoloration of the finger tips and plantar and palmar surface nothing else was found except in one case that showed a marked aplasia of the lymphatic system.

The second case was one of Spontaneous Intracranial Hemorrhage, presented by Dr. Branch Craige.

This was a 16 months old baby, whose delivery at birth had been an instrumental one but with no complications. Had had whooping cough when 8 months old, but with no untoward after effects. On the 25th of last February, he had complained in the mornings as usual. He came in to take his bath and while in it he suddenly turned deathly pale and started crying. In a few minutes he lapsed into a semicoma and began to groan. Then he had a convulsion. His temperature quickly rose to 103 or 104. After the convulsion he remained in a position of opisthotonos. The semicoma continued. His

mother was able to get him to take plenty of fluids, however. He was brought to El Paso on the fifth day of his illness still in this condition. His right knee was flexed and his right hand in a constant state of motion. Left arm and leg showed partial paralysis. The eye grounds were negative, pupils equal and ears normal. The right cheek was retracted. The reflexes were greatly exaggerated on both sides and he had ankle clonus. The spinal fluid showed much free blood with disintegrating red blood cells. Since then he has improved wonderfully. The opisthotonos has disappeared and he is gradually regaining the use of his limbs. Today he has been up on his feet several times. His mentality is perfectly normal. Dr. Craige thinks that he is going to make a complete recovery. He said that the prognosis in these cases depended on the authority you read and on the experience you have had. Butler states that one-third of them will show idiocy, one-third epilepsy and the other one-third some other form of mental derangement, and that all of them will have left some paralysis. Other authorities state that they have never seen a case having untoward results.

Dr. John A. Hardy stated that he had seen the case previously. The parents had wanted an operation, but that he saw no prospect of any good resulting from operation. He can see no difference in spontaneous hemorrhage and traumatic hemorrhage. He has never seen a case of subdural or subcortical hemorrhage that did not die soon or get well without sequelae. Spinal tap is of great aid, especially to diagnosis and prognosis. Only two conditions in which decompression is indicated, the first being high pressure of the spinal fluid on the initial tap and high or higher pressure on subsequent taps; the second indication is high pressure with little fluid and no blood, (indicating an extradural hemorrhage).

Dr. J. Mott Rawlings cited a case of his own. A four months old baby that fell out of bed and died four hours later. Autopsy showed a rupture of the right middle meningeal artery with thrombus formation at the point of rupture and with 200 to 300 c.c. of free blood.

Dr. Willis W. Waite stated that he had never performed an autopsy on a case of spontaneous hemorrhage in a child, but had done several on adults. Three of these were due to aneurism. None of them were located at the branching of the vessels. He did not know what was the cause of the aneurism except in one case which showed a four plus Wassermann of the spinal fluid.

Dr. J. A. Rawlings said that from the description of this case,—convulsions followed by high fever, coma, hemiplegia and opisthotonos—he could not exactly agree with the diagnosis. It looked to him more like a picture of acute encephalitis, which is a much more common occurrence than that of spontaneous hemorrhage. He had had a case recently similar to this one, but it was a case of encephalitis. He thought more thorough study of the spinal fluid should have been made before arriving at a diagnosis of spontaneous intracranial hemorrhage, a case of which he had never seen.

Dr. Black thought it would be impossible to draw conclusions from the cell count of spinal fluid containing free blood. Reaction from hemorrhage itself might also cause an increased cell count.

Dr. Craige thought that in case of encephalitis you would hardly expect hemiplegia and blood in the spinal fluid immediately following the onset of the illness.

The next clinical case was that of scurvy in a 15 months old baby, presented by Dr. S. H. Newman.

# HAY FEVER

## *An Advertising Statement*

**H**AY FEVER, as it occurs throughout the United States, is actually *perennial* rather than *seasonal*, in character.

Because in the Southwest—Bermuda grass, for instance, continues to flower until December when the mountain cedar, of many victims, starts to shed its pollen in Northern Texas and so continues into February. At that time, elsewhere in the South, the oak, birch, pecan, hickory and other trees begin to contribute their respective quotas of atmospheric pollen.

But, nevertheless, hay fever in the Northern States at least, is in fact seasonal in character and of three types, viz.:

TREE HAY FEVER—*March, April and May*

GRASS HAY FEVER—*May, June and July*

WEED HAY FEVER — *August to Frost*

And this last, the late summer type, is usually the most serious and difficult to treat as partly due to the greater diversity of late summer pollens as regionally dispersed.

With the above before us, as to the several types of regional and seasonal hay fever, it is important to emphasize that Arlco-Pollen Extracts *for diagnosis and treatment* cover adequately and accurately all sections and all seasons—North, East, South and West.

FOR DIAGNOSIS *each pollen is supplied in individual extract only.*

FOR TREATMENT *each pollen is supplied in individual treatment set.*

ALSO FOR TREATMENT we have a few logically conceived and scientifically justified mixtures of biologically related and simultaneously pollinating plants. Hence, in these mixtures the several pollens are mutually helpful in building the desired group tolerance.

IF UNAVAILABLE LOCALLY THESE EXTRACTS  
WILL BE DELIVERED DIRECT POST PAID  
SPECIAL DELIVERY

*List and prices of food, epidermal, incidental and pollen  
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YONKERS, N. Y.



The mother's chief complaint of the infant was extreme irritability and paralysis of the right leg; no fever and no digestive disturbance. No paralysis was found, but marked sensitiveness of the lower limbs, especially the right. The gums over the four unerupted canine teeth were found quite swollen and bluish looking and very sensitive. The baby's diet showed a deficiency of vitamin C-containing foods. An x-ray of the right leg by Dr. Mason, on the 17th day, failed to show any changes in the shaft or epiphyses, although a beginning painful nodule was beginning to make its appearance just above the internal malleolus. The baby was rapidly improving on an antiscorbutic diet.

Dr. Mengel (dentist), who had seen and studied the case and was the first to suggest the diagnosis, stated that nearly always the early symptoms of scurvy were to be found in the mouth. The gum over erupting teeth would turn pink, rose-colored and finally bluish and swelling would occur. This was due to subperiosteal hemorrhage. He said that Dr. Hirschfield had brought out the point that in older patients you would find that the tip of the gingiva, between the teeth, would not present the bluish black appearance shown by the rest of the gum. Vincent's angina has, at times, to be differentiated from scurvy.

Dr. Black thought that in three weeks time the x-ray should show changes in the shafts and epiphyses.

Dr. J. A. Rawlings said that while formerly scurvy was a common disease it was rarely seen now among the more intelligent classes. The recovery, that these cases made on a proper diet was remarkable. It is often mistaken for rheumatism.

Dr. Werley told of his experience while a medical student with his own child who became afflicted with scurvy.

Dr. Cathcart told of an orthopedic surgeon here years ago who was on the point of encasing both ankles of a child in plaster of paris casts, account of swelling and pain, when his attention was called to the fact that the child had scurvy. Proper diet relieved the condition entirely after a few days.

Dr. Craigie stated that of the two cases in his experience, both of them had been fed on malted milk.

Dr. S. H. Newman then presented a case of tularemia of the ulcero-glandular type. This was the case of a man who, while hunting and skinning jack-rabbits and cotton-tails up in New Mexico, stuck a thorn in his left middle finger. A painful, punched out ulcer soon developed there, followed in a few days by a painful adenitis in left axilla. Later a few fleeting painful nodules developed on forearm. A few days after the development of the ulcer, he started experiencing chilly sensations and aching all over and headache. All of this had continued up to the present and the patient feels weak, although he is up and about. This is the 15th day of his illness and there is no sign yet of improvement, either in his general condition or in the appearance of the ulcer and the adenitis. An agglutination test on blood taken on the 11th day of the illness was positive only in a dilution of 1 to 20. Dr. Newman thought that this was an extremely mild case, but that the agglutination titre would be much higher in a couple of weeks more.

Dr. Waite said that four cases of tularemia had been diagnosed here by means of the agglutination test.

Dr. Leslie M. Smith then presented a case of hyperkeratosis in a child four years old. This has been present since birth. The skin on the palms and soles was greatly thickened. The mother had the same condition but to a lesser degree. The treatment in

these cases simply aims at amelioration, such as good-sized doses of x-ray or salicylic acid ointments to soften up the skin. There is no permanent cure.

Dr. S. D. Swope then presented the sixth and last clinical case. This was a man 29 years old, who had been suffering from headache for the past five years. Never a day passed but what he had a headache during some part of it. Suffers from an inferiority complex. Has been a drifter since age of 14, but has no harmful impulses and never carries weapons of any kind. He has no desires except the basic instincts. Is of normal intelligence. Spinal tap showed the spinal fluid to be under greatly increased pressure. 30 c.c. were withdrawn and for a short period of time his headaches stopped. Spinal fluid and blood had negative Wassermanns. Dr. Swope considered this a case of chronic hydrocephalus and thought that by doing a cisternal puncture and injecting air, it could be shown with the x-ray. He thought, however, that the condition was too general and advanced to be alleviated.

The paper of the evening by Drs. S. A. and F. P. Schuster entitled "The Climatic Factor in Sinus Infection" was then read by Dr. Frank Schuster. His conclusions were as follows:

1. That favorable climatic conditions can play an important role in the healing process, both in conservatively and radically treated cases, and this has a scientific experimental basis and is borne out by clinical observation.

2. That favorable climatic conditions aid the healing from its general alternative biological effect in building general resistance, its anti-bacterial effect of ultraviolet and drying effect tend to quickly destroy polluted atmosphere and its local action on the mucous membrane, raising the resistance and augmenting ciliary action and drainage.

3. That adequate drainage and aeration must be present. We cannot expect any climate to heal a sinus infection where drainage and aeration are blocked by a deflected septum, polypi, hypertrophied adenoids, tonsils, or abscessed teeth continuing to supply infections and feeding into the sinus.

4. That each case must be an individual study as to the best method to employ in affecting a cure.

5. That we must not fail to appreciate and use other factors such as diet, irrigations, chemicals. Packs and surgery may be necessary before climatic conditions can aid in healing.

6. That climate is only one weight in the scale tending to tip the balance in favor of the healing process, but frequently enough to throw the balance in favor of the patient.

In the discussion that followed, Dr. J. Mott Rawlings stated that he liked to hear stressed the care of the general health of the patient in the treatment of these sinus affections. From personal experience with his own case he knew how important it was.

Dr. Werley agreed with Dr. Rawlings in this and thought that often we might obviate the necessity of calling in a specialist simply by building up the general resistance of the patient.

Dr. Egbert, having been interested in climate for a number of years, was glad to see some mention of it made now. He thought that the wonderful cures ascribed to the different therapeutic lamps by their manufacturers smack of quackery and serve to divert attention from real hygienic measures. Sunlight, rich in both ends of the spectrum, is necessary to proper hygiene. In addition, we must have fresh air unpolluted by smoke or human lungs,—air in motion. A low humidity and no very great variations in temperature changes are essential. All



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of this goes to make up the hygiene of the great outdoors.

Dr. Awe stated that he was associated with Dr. Dean, who was the pioneer in the climatic treatment of these cases. Formerly Dr. Dean's treatment was entirely radical but he found out that a large percentage of his cases so treated showed no improvement. This especially with children. Then he started using hygienic measures along with his other treatment and found that his results were very much better. Six years ago he had a so-called "sinusitis diet" which consisted principally of orange juice and cream.

Dr. Schuster, in closing, said that diet as a therapeutic measure was coming to the fore more and more. He stressed the point that we must not swing too far and expect hygiene to cure conditions where there is inadequate drainage, infected teeth, polypi, etc.

The next on the program was a case report by Dr. J. Mott Rawlings of a case of tetanus, with recovery. This was a man 42 years of age, who two weeks prior to the onset of symptoms had received a punctured wound of the foot while irrigating. He started sick with fever, malaise, and then general convulsions. The convulsions were clonic in type and occurred every eight minutes. He had become very dehydrated before treatment was instituted. Examination of the feet failed to show the focus of entry. Fluids were forced intravenously, subcutaneously and per rectum and antitetanic serum given every few hours. In all, he received 20,000 units intramuscularly, 95,000 intravenously, and 75,000 intraspinally. He gradually recovered from his tetanus, but developed every complication possible. He developed serum anaphylaxis from which he nearly died and only recovered by prompt and efficient stimulation. He developed a serum meningitis and then a partial paralysis of the muscles of deglutition. In the attempt to feed him with a catheter, a broncho-pneumonia set in. For awhile he had total suppression of urine and then his bowels became temporarily paralyzed, but he finally recovered from all this and was able to return home apparently well.

It now being ten o'clock, legal closing time, Dr. Will Rogers made a motion that adjourn and immediately reconvene. Motion seconded and carried.

The application of Dr. Chester D. Awe was read and he was unanimously accepted as a member.

Under unfinished business, Dr. Waite reported, stating that he had written and telegraphed the other members of the Executive Committee of the Medical and Surgical Association in regard to the kind of program they wished to put on at the next annual meeting to be held here in November. The Albuquerque member wanted the same kind of meeting we held here two years ago and the member from Phoenix did not. So he suggested that this society pass the deciding vote. On motion by Dr. Cummins, the society favored a meeting similar to the one of two years ago—that is one in which distinguished men in the profession from all over the country be invited to participate in the program.

## MASONIC HOSPITAL (El Paso) STAFF MEETING

February 13, 1930

On Feb. 13, the staff of the Masonic Hospital, El Paso, Texas, held its regular meeting, three cases of Embolism, from the current files being used as basis of discussion.

Case I. By DR. HARRY LEIGH: The patient was a primipara, 38 years old, pelvis about the average. Patient had small pox at the age of five, typhoid

at 16. Has chronic sinusitis and hay fever. During pregnancy she became decidedly overweight and had been inclined to overweight for some years. She went into labor, Jan. 14, and it was about two days before she finally delivered, occiput posterior. She had sluggish pains, very little physical endurance, dilated slowly and had been given a good deal of rest. At no time did she really work with her pains. At the end of 48 hours she was completely exhausted, the cervix not dilated. Her pulse had gone up. The cervix was then manually dilated, medium forceps applied and in six minutes under ethylene anesthesia the child was delivered. There was a slight perineal laceration which was repaired. The cord was about 3 m.m. thick, and the child's heart stopped immediately after the cord was clamped, and was of course stillborn.

On the fourth day her temperature suddenly went to 102.8, blood count was 10,000 and hemoglobin found to be 60. An acute pharyngitis was noted. On the 19th she developed pain in the chest, decompensation was noted, and it was thought pneumonia was developing. She was given digitalis until she became digitalized and the pneumonia apparently cleared up. The patient had a slight stitch infection at the site of one stitch, which occasioned very little trouble and was soon entirely well. At no time did she have any pelvic tenderness.

On the 24th, Dr. Duncan was called in consultation; his opinion follows:

"Patient complaining of difficult breathing. Respiration has a tendency to be sighing but is not hurried. There is no cyanosis. Evident anemia. Chest: left side, expansion less; tympany over base behind on left. There is an area of bronchial breathing in the left interscapular; moderate number of fine moist rales over the left lower and many crepitant rales over the left lower. The heart is not enlarged. No murmurs heard but there is gallop rhythm. Pulse 144, small volume and low tension. Impression: The respiratory distress is remarkably variable and not due to pain. The signs of circulatory weakness are out of all proportion to the extent of lung involvement or toxemia. Pulse was 150 on the second day of fever. The extensive lung moisture suggestive of edema of circulatory failure. I am more inclined to think there has been a pulmonary embolism than pneumonia, but leave the question open for the present. Would suggest increase in digitalis."

Notes on the progress record the following day state that gallop rhythm is present, pulse 124, no change in consolidation in left lung, but less moisture, condition better. This condition was about the same for the next three days, patient running a septic temperature. On the 30th the patient developed severe pain in the epigastrium, aggravated by deep respiration. Some pain in the lower sternal region on breathing only. This not accounted for on physical examination, nor is the high fever. Heart again began gallop rhythm. Abdomen soft, not distended, pelvis clear. On the 31st the progress note reads "No pain, lungs unchanged, pulse 120, good quality. Heart rhythm normal. Cause of fever still undetermined. Urine specimen shows moderate amount of pus." On Feb. 1, temperature came down, otherwise no change. Feb. 2nd, there was soreness over the precordium on deep respiration. To and fro pericardial friction at base of heart, (acute pericarditis?) Pulse 120, gallop present. Slight tenderness over hypogastrium. Pericardial friction rub almost disappeared, marked tenderness in low abdomen which appears to be inflammatory. On Feb. 5 patient gradually getting worse; had hard chill, temp. 104, pulse 140 resp. 44, abdomen more distended, very tender. Pain in left side similar to

pleurisy, heart slightly more rapid, respiration getting faster. Pantapone (grs.  $\frac{1}{2}$ ) given for relief of pain. Distention high in the abdomen increased, duodenal tube used with slight beneficial result. Patient expired Feb. 7.

Question arose during various consultations as to whether patient had splenic infarct, accounting for the pain in the upper abdomen. An interesting feature of this case was that about the time the patient developed pericarditis, she also had pyelitis. Another was the fact that the cord never developed properly. The vessels were so small that a needle could scarcely be inserted in the lumen.

The lesson to be learned in these cases, is to look out for patients with chronic hay fever, and sinusitis. Myocarditis in this case was very rapid following the onset of acute throat infection." (Dr. Leigh).

Case 2. Pulmonary embolism, patient of DR. F. P. MILLER. The patient was a strong, well developed man, age 38, who had lived for some years in Mexico. Family history negative except that his mother died at 50 of heart disease, type not known to the family.

On January first, the patient noticed a small pimple just inside the right nostril. His wife opened it with a sterilized needle and a little serosanguinous fluid escaped, but no core or pus. He had no fever, but suffered considerable pain, out of proportion he thought to the size of the pimple. His head ached, and the next morning he went to Dr. Miller's office. He was told to let his nose alone, not to squeeze or attempt to open the pimple, but on insistence of the patient was finally allowed to put

a flax seed poultice to the nostril, and keep this hot by the use of a hot water bottle. The patient went home, took some aspirin, went to bed in order to keep the poultice in place. His face became swollen in a few hours, and he complained that even his teeth felt sore and hurt him. About 11 p. m. the same night he began to suffer extreme pain in the left arm and across the chest, especially in the region of the heart. About midnight he said his head felt as if it would burst. He seemed unable to get his breath, had to breathe with his mouth open, and respiration was painful.

Past History: Had diphtheria in childhood, and some malaria since living in Tampico. He is subject to severe colds, and has some stoppage in his nasal passages, from which he has suffered for the last few years. When in this climate he complains of his nose being dry and having some difficulty in breathing. Adenoids and tonsils have been removed. His teeth have recently been gone over and are in good repair. Bowels are regular, and he has no urinary disturbance. His general health is good. He has no children.

Dr. Awe saw the patient before hospitalization, and the following is his record of the beginning of the case at 11 p. m. of the night above mentioned. At 11 p. m. last night the patient noted slight distress across the back and down the left forearm. He thought that the latter was due to holding his arm in a cramped position (keeping the hot water bag in position). At 2 a. m. he began to suffer across the back and at 4 a. m. developed intense pain in the precordial region which cut like a "ma-

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chete" every time he breathed or coughed. He was unable to lie down and had to sit upright in a chair.

At 7:45 when Drs. Miller and Awe first saw him he was extremely pale, temperature 95.8, pulse 84 and of poor quality. The heart was enlarged one finger-breadth to the left of the nipple line. Sounds clear and regular. Lungs were clear. Nitroglycerin given without effect. Papaine (drams 1) given at 5:30, morphine (grs.  $\frac{1}{4}$ ) at 8:45 and papaine again shortly after entering the hospital. None of these gave him relief. Blood pressure 112/80. Abdomen negative. After the hypodermic of morphine he stated that his left arm was numb for 15 or 20 minutes. Temperature just before entering the hospital 97. Wassermann negative; sputum negative; blood culture sterile. The diagnosis seemed to be either coronary infarction or acute pericarditis.

Dr. Werley was called in consultation and felt that infarction was the most probable diagnosis.

The first thing to emphasize in this case was the severe shock this patient was in. Temperature 95.8, respiration not increased, complaining of numbness in the left arm. The pain did not seem to have any special reference to breathing. The attack began at 4 a.m.

Five times that afternoon his chest was gone over, finding only slight suppression of breath sounds in left chest, no change to percussion note. X-rays taken on the 6th showed the right lung clear except for elongated thickened hilus; the heart shadow normal in outline; the left lower lobe infiltrated with both discrete and confluent type of lobular consolidation. The picture of the 5th, shows more involvement than the one of the fourth. The pleura is thickened over the left lower lobe and the diaphragm outline is not apparent. (Dr. George Turner). Hemoglobin 90, leucocytes 18,650, polys 91. Catheterized, specimen negative.

The Progress Notes of that date state that there was evidence of definite consolidation of the left lower lobe with dullness, tubular breathing and increased breath sounds. Fine rales on quiet breathing over the left lower lobe and moist rales over the right lower lobe. Cyanosis of lips and finger nails. The oxygen tent was placed in position and three liters per minute of oxygen given. The oxygen was discontinued on the 10th.

On the 11th, examination showed the left base to upper scapula dull on percussion, fine moist rales heard in the upper third of chest. Increase in transmission of voice sounds with bronchial breathing. Right: clear on percussion on anterior surface with slight dullness on posterior surface at base; a few fine moist rales heard in base. General condition good. No cyanosis after oxygen was discontinued. Very little cough, no expectoration. No pain on deep breathing. Heart sounds faint. Jan. 13, entire left lung dull, right is resonant, breath sounds are tubular, many rales at left base; few fine crackles at right base; heart sounds clear, distinct and regular. On the 24th: an area of dullness from the 6th to the 10th spines, breath sounds well heard, tubular, almost cavernous in quality, moist rales heard over this area. Patient allowed to go home in ambulance. Shortly after going home patient developed an empyema, pus was aspirated and the patient returned to the hospital for rib resection and drainage. Condition now is good.

Case 3 by DR. J. H. GAMBRELL, was that of a man 50 years old, brought into the hospital by ambulance after a severe injury sustained in an automobile accident. When he entered the hospital he was in a semi-conscious condition. Numerous abrasions and lacerations, but the main injury was to the right leg. The bones protruded from

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the flesh about the knee, and there was a puncture wound in the middle of the thigh where the femur had gone through the flesh. The patient was in considerable shock. X-rays revealed linear fracture extending laterally around the head across the right frontal bone. Fracture of the right femur separating the condyles from the bone shaft and from each other. The fracture was compound and comminuted. The patient was in too bad condition to attempt to set the fractures, and a metal long leg splint was applied, awaiting sufficient recovery to permit surgical treatment of the fractures.

The patient was apparently rational at times, although always somewhat sluggish mentally and we did not know how much of this was due to injury and how much of it was normal with him.

The third day he was taken to the surgery and an open reduction done, the leg put in plaster cast, with windows over the infected areas. The patient was a powerful man, and would suddenly decide to get out of bed, and this he succeeded in doing even before the cast was applied. He was in the hospital 28 days, mental condition varying during this time from apparent normality to delirium. Both the wound at the knee cap and the one in the upper thigh almost in the buttocks were the sites of infection, much pus and necrotic tissue being removed at each dressing. The 27th day after his injury, his condition was better than it had been at all, and a member of his family saw him and decided to go to California and give a report of his case to his family doctor and have the patient sent out there as soon as arrangements could be made. That night about 8:30 the patient had been prepared for the night, and the light turned off. He was in two bed ward, and before the other patient went to sleep he heard considerable movement over in his room mate's bed, and heard what he thought was water dripping on the floor. He put on the light and found the man with the fractured leg attempting to get out of bed, and found that what he had thought was water dripping was blood, pouring from this wound at the knee. The doctor got to him in a few moments, but the patient had had a severe hemorrhage. This was controlled by pressure, the foot of the bed elevated, and hypodermoclysis given. His color returned, the patient was conscious, did not complain of any pain, his pulse picked up and it was thought that he would be all right unless he had another hemorrhage from this wound. Dr. Gambrell remained in the building, a special nurse was again put on the case, and at eleven (about three hours following the hemorrhage) the nurse was counting the pulse, which was rapid but fairly good quality, when suddenly the radial pulse stopped, respiration continued, and shortly afterward the patient expired.

Postmortem revealed an embolus, coronary, evidently of popliteal origin.

Discussion by DR. CUMMINS: These are interesting cases because of their diversity, and it is unfortunate that Dr. Leigh's case did not have an autopsy. The patient being thick, short in build, having chronic sinus infection, anemia, and damaged circulation, she was a fit subject for embolism or infarct following trauma of any sort, and would in all probability have had trouble following any operation. In Dr. Gambrell's case, the extensive infection, delirium, trauma and damage to the blood vessels entitled him to embolus. In my opinion Dr. Miller's case was certainly one of infarct rather than frank pneumonia. The pain in his case was characteristic.

DR. LEIGH during the discussion stated that the only thing against primary embolism in his case was the small amount of pain. He was inclined to think

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the patient had pneumonia, followed by pleurisy, and pericarditis associated with infarction of some sort when the pain became intense.

Dr. Gambrell remarked that he had recently looked over statistics concerning deaths recorded by the Mayo Clinic, and that of their surgical postoperative deaths due to embolus, 80 per cent were pulmonary, 10 per cent cardiac, and 10 per cent of indeterminate or scattered over various parts of the body.

### ST. JOSEPH'S HOSPITAL (Phoenix, STAFF MEETING December—1929.

The regular monthly meeting of the Medical Staff of St. Joseph's Hospital was held in the lecture hall of the Nurse's Home on Monday evening, December 8, 1929.

The minutes of the previous meeting and the Analysis of Hospital Service for the month of November were read. Dr. Willard Smith was voted collectively to be admitted as an active member of the Staff, also Dr. Berger and Dr. Ploussard having completed a year were admitted to the active staff.

The chairman, Dr. E. Payne Palmer, announced this to be the annual meeting for the election of officers for the coming year and nominated Dr. Brockway as his successor for the ensuing year. This was seconded and put to vote by ayes and nays and Dr. Brockway was unanimously elected.

The chairman then called for nominations for office of Secretary. Dr. Brockway nominated Dr. Greer who was elected by a unanimous vote.

The advisory committee composed of Drs. Milloy, Goodrich and Schwartz automatically became the Executive Committee and ballots were distributed for the election of the advisory committee and Drs. Palmer, Bloomhardt and Jordan were elected.

Dr. Palmer resigned the chair to Dr. Greer, who was in charge of the following program.

DR. A. C. KINGSLEY presented Case No. 18071. The chief complaint was chills and fever, periodic.

C. M., born and raised in Mexico where he lived until he was about twenty years of age. He had the ordinary diseases of childhood. No serious injury. For several years before leaving Mexico he suffered from malaria. Had very severe chills and fever at more or less regular intervals during each year. Would take quinine with some relief. At these times he suffered with intense backache, severe chills followed by fever. He left Mexico and went to Idaho about sixteen years ago. Never had any very pronounced symptoms of malaria since.

P. H. About one month ago he suffered an attack of "hives." Broke out with large blotches all over the body. Thinks this followed eating some meat which perhaps was not in good condition. He consulted a physician at Blythe, California, who looked him over rather hurriedly and made no diagnosis. Directed that his bowels be regulated and gave him some medicine. Since this time has not felt particularly good. No headaches, nausea or vomiting. No diarrhea. No nose bleed.

November 10th he consulted me at my office. Complained of a dull, heavy sensation along the costal margin in midaxillary line on the left side. This would become worse following his riding a road scraper. He would be relieved as soon as he would reach home at night and lie down. Does not think he had any temperature up to this time. While he knows of no definite injury, he thinks that the riding of the road scraper has probably caused and aggravated his condition.

Examination reveals a well nourished man in apparently good physical condition. Head negative.

Teeth in fair condition. Tonsils negative. No adenopathy. Lungs entirely negative. Heart entirely negative for murmurs, no enlargement; pulse 74, full and regular, however, not particularly strong. Temperature 99 at 12 noon. Apex beat in the 6th interspace. Abdomen is flat, soft and no rigidity or pain on deep pressure. However, pressure along the lower costal margin on the left side rather aggravates his sensation of fullness or discomfort in this region. Neurological examination entirely negative.

On November 13, I was called to his house in the evening. About 5 a. m. of the 12th he had a very severe chill lasting about a half hour, followed by a temperature and some sweating. He felt somewhat poorly all day, however he was up and about. The following night he slept well but felt perhaps a trifle nervous. About 5 p. m. on the 13th he had another severe chill. At this time I was called.

General physical examination was again entirely negative except the tenderness which was perhaps more marked. There was more discomfort along the left costal margin. Temperature 104 and pulse 110. He was not feeling badly and said he was perfectly able to get up. There was some discomfort and some tenderness over the entire abdomen. He was quite badly constipated. Bowels were opened and quinine administered.

Nov. 14 he was seen again by me on this date. Was still feeling fine, although his temperature and pulse were the same as on the previous day. The tenderness in the abdomen had disappeared following the cathartic. Nov. 15, condition was the same. Pulse and temperature the same. No improvement under moderate doses of quinine. Against orders he had been up and shaved. He said he felt perfectly well. About daylight of the morning of the 15th he had another chill. Nov. 16th pulse and temperature about the same. Still no physical findings. No marked abdomen tenderness. Not being satisfied as to his condition, I asked for consultation. They selected Dr. E. Payne Palmer, who saw him in consultation that evening. Dr. Palmer's only suggestion was that the doses of quinine were probably not sufficient. Nov. 17, under large doses of quinine no improvement. Nov. 18, while there is no marked change in his condition, there is a suspicion of moisture in the lower base and some bronchial breathing over his entire chest. He was transferred to the hospital thinking that he was developing pneumonia.

Pulse became more rapid. Breathing was more rapid, but the condition in the chest had improved. Temperature remained about the same. There had been on the 18th beginning diarrhea which was continuing. This responded readily to bismuth mixture. However, he suddenly collapsed about midnight and was in a very critical condition during the balance of the night. Nov. 20, delirium of a low muttering type developed. He was restless from abdominal distension. Bowels not moving. All actions were under control. Nov. 21, there seemed to be some slight improvement. Had a slight nose bleed. There was some blood expelled from the mouth which was taken at first for bloody expectoration but this probably came from the nose. During the day he became more irrational. The distention increased. About 5 o'clock the pulse became very irregular and weak. He died at about 10 p. m. November 21.

Autopsy report by DR. MILLS:

Permission was obtained to open the abdomen only. The stomach and the intestines were greatly distended with gas. Inspection of the stomach and the upper small intestine showed no gross changes. The lower ileum showed patches of hyperemia and

marked induration. In some of these areas there was beginning necrosis and recent exudate present. On incision of the intestine these areas showed large ulcers with indurated margins and necrotic base. There were large numbers of these ulcers in the lower third of the ileum. No other definite pathology was found. In the intestinal tract the spleen was enlarged, soft, hyperemic. Liver showed no definite change, normal. The kidneys showed moderate degrees of passive hyperemia.

Sections of wall of the ileum including an area of ulceration shows marked necrosis and inflammatory infiltration extending to the peritoneal surface out, recent exudate on peritoneal surface. Sections of lymph nodes show diffuse inflammatory changes without definite necrosis.

**Diagnosis:** Typhoid, with extensive ulceration of ileum.

**Discussion by DR. E. PAYNE PALMER:**

The physical examination of this patient, when first seen in consultation with Dr. Kingsley, Nov. 16 gave some tenderness on deep pressure in the right iliac region, without muscle rigidity. The temperature was 105, the pulse rate 120 and respiration 22. Because of the previous malarial infection and the absence of definite physical findings, a tentative diagnosis of malaria was made and the continued administration of quinine in large doses advised.

When seen again on the 18th at seven p. m., there were crepitant rales in the left lung with faint bronchial breathing. Otherwise the physical findings were the same as before. Every physical finding which goes to make up a classical picture of typhoid was absent. The general appearance was not that of a patient with typhoid. There was an absence of the moderate diffuse redness of the face in the early period. There was an absence of the frequently observed peculiar "typhoid odor." The tongue was not characteristic, i. e., dry and coated except on a triangular area at the tip and at the edges. The spleen was not palpable, there was no bronchitis, there was an abscess of the characteristic pea soup stool, there was no roseola, no meteorism, there was an absence of a relatively slow pulse and leucopenia with lymphocytosis, a negative bacteriological blood, an absence of the Widal agglutination. So how could a diagnosis of typhoid fever be made? What else could his condition be due to? Central lobar pneumonia was ruled out by x-ray, malaria was eliminated by repeated blood examinations. Amebic infections were ruled out by examinations of the stools. Nephritis and pyelitis could be eliminated because of the urinary findings. Acute miliary tuberculosis was ruled out by x-ray. In acute general sepsis the pulse is very rapid and out of proportion to the height of the temperature. This condition did not exist and there was a negative blood culture. In acute bacterial endocarditis, the pulse is usually very rapid and weak with cardiac murmurs and there is a leukocytosis with predominating polymorphonuclear cells and a marked diminution of the lymphocytes and almost entire disappearance of the eosinophiles. Acute leukemia had to be thought of and ruled out, as it frequently bears a striking resemblance to sepsis. The diagnosis does not depend on the number but on the form of the leukocytes. Malta fever by the absence of the characteristic undulating type of the temperature and of the profuse perspiration. Acute appendicitis, acute cholecystitis and acute pancreatitis could be ruled out by the absence of acute abdominal symptoms. An osteomyelitis may give no characteristic local signs but the temperature is remittent and there is a leu-

kocytosis. The bones were carefully examined and no tenderness on pressure or swelling over the periosteum could be detected. Acute arthritis was sought for but no painful or tender joints could be found.

DR. R. B. RANEY presented a discussion of brain tumor, based on Case No. 18027, with autopsy findings:

In opening a discussion on brain tumors, I will try first to bring out what seems to be the reason for a failure in early diagnosis of practically every type of central nerve system pathology.

As we all know, the brain is anatomically isolated from the usual methods of physical examination of other parts of the body by a bony vault. Second, the extreme complexity of anatomical structure. Third, the lack of familiarity with the various syndromes, which no doubt are overlooked due to the rarity of occurrence and the grave prognosis in their presence. Since the general symptoms, if properly interpreted, point very directly towards brain disease, they may without close study be referred to the gastro-intestinal tract or other remote parts of the body. So taking these glaring facts into consideration, it isn't any wonder that lesions of the central nerve system are not recognized until they have become far advanced. In almost every case that has come under my observation they have all been treated from weeks to months and even years for various and sundry ailments ranging from constipation to migraine. Now I do not wish to state here that all cases should be recognized early, but I will say that a great majority of them should be. This is especially true of the brain tumor. While it is common knowledge that occasionally a tumor will exist for years without much discomfort to the patient, it certainly does not prove the rule.

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Roughly, tumors of the brain may be divided into three clinical types; the true tumors, the infectious tumors, and the vascular type.

Among the true tumors, the most common types encountered, especially in adults, are the gliomata. They occur most frequently in the anterior fossa but may occur in any location, springing as a rule from the ependymal layers. They grow by extension are not well encapsulated and therefore cannot be removed adequately by surgical interference as some of the encapsulated types. The prognosis in this type of tumor is especially grave. The sarcomata are not infrequent, occur most commonly in the adult, malignant by nature and spring from the connective tissue structures. They are strictly surgical cases, but like all of the sarcomata, they metastasize quite readily. Endotheliomata are quite frequently encountered; they grow very slowly, the symptoms developing over a period of years. They are related somewhat histologically to the carcinomata but are relatively benign, encapsulated, and if within surgical reach, comparatively easily removed, with a fairly good prognosis. They may occur in any location, but are frequently encountered in the posterior fossa about the cerebello-pontine angle. The fibromata are not infrequently encountered. They are usually outgrowths from the cranial nerves, the trigeminal nerve being a frequent site, within the realm of the cerebello-pontine angle and when they are within surgical reach, the prognosis is very good as compared to other types just described. Lipoma, chondroma, osteoma, chordoma, etc., are extreme rarities and do not warrant discussion at this time.

Among the infectious tumors, tuberculosis and syphilis are the most prominent types. The tuberculoma is probably the most common in occurrence and is particularly common among the tumors of children. It may be solitary, but frequently is multiple, often attaining immense dimensions before being recognized. The type has been successfully removed but is not a case for the best prognosis. The syphiloma is rather frequent in occurrence. The location is usually about the base of the brain. Slowly growing, occurring all the way from one to thirty years after the initial specific infection and probably treated best by the antileptic regime. Actinomycosis has been encountered but is very rare.

Among the most frequently encountered vascular tumors of course, is the aneurysm. It is frequently leptic in origin, but not of necessity. It has a predilection for the basilar artery but it may occur in any location. The prognosis is ultimately grave and no satisfactory treatment exists to the present day.

The general symptomatology as a rule is quite characteristic. The four cardinal pathognomonic symptoms are headache, vertigo, choked disc and projectile vomiting. As a rule the general symptoms arise early and considerable time before the appearance of the localizing symptoms. Headache is probably the first symptom encountered and is present in a great majority of the cases and is very constant. It may be of the fronto-occipital type or definitely localized. However, the location of the headache has no bearing on the location of the tumorous growth. It may be a dull background of pain with excruciating exacerbation which, as a rule, terminates in a crisis with nausea and vomiting and intense dizziness. During these attacks, maniacal outbreaks are not infrequent. If the headache is definitely localized on one side or the other and accompanied by tenderness and dullness to percussion, along with sufficient x-ray evidence, it is a very valuable localizing sign. However, as

mentioned before, too much stress should not be laid on the location of the pain with reference to the tumor. Vomiting either with or without the presence of nausea is usually encountered at some stage of the disease. Frequently it is a late symptom, especially if the tumor happens to be located in the anterior fossa. However, if the growth happens to be in the posterior fossa, vomiting may be a very distressful early symptom, causing in some cases even extreme emaciation. Choked disc, optic atrophy and vertigo are very early symptoms in tumors in the posterior fossa. The choked disc being due to the pressure of fluid between the optic nerve and its vaginal sheath, while the dizziness is due to the disturbance of the synergic control mediated through the cerebellum and if allowed to continue over even short periods of time, irreparable damage may be done. These symptoms are all due to increased pressure within the cranial vault. They may be either general or confined to a localized hydrocephalus, either internal or external, depending entirely upon the growth. Mental changes are almost invariably present but are not necessarily pathognomonic. They tend to progress with the increase in the pressure or the extension of the growth and vary from hallucinations, aphasia and dementia to maniacal delirium, but the general tendency is to that of dementia. The cardio-respiratory signs are due to an action brought about either by pressure or extension of the growth on the cardio-respiratory centers, manifesting themselves as a rule by periods bradycardia, tachycardia and Cheyne-Stokes breathing. The optic nerve signs are very favorable from a localizing standpoint as well as of a diagnostic aid. A marked choked disc is suggestive of posterior fossa involvement, while

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a visual aphasia would represent that of the posterior lobe of the cerebrum. To go into detail regarding the localizing signs is entirely too large a field to be covered at this time, so I will confine the rest of this paper to a few of the points in the case just described.

Roughly, the salient features in the history are as follows: Frontal occipital headaches of a year and one-half duration with crises to which the dizziness was very pronounced and vomiting occurred frequently. During the last six months of the illness the onset of change in personality, periods of coma progressing to a mild degree of dementia. Among the outstanding points in the physical examination are as follows: The persisting bradycardia, left-sided weakness of the body with twitchings, the great increase in the spinal fluid pressure and cell count. While the cell count was extremely high, one would expect as much in the fact of the inflammatory processes that would be brought about by extreme pressure, and the final development of profound coma with death. Evidently this case is without doubt a rapidly growing tumor which more than likely occupies the right lobe of the cerebrum. While localizing signs have not been marked out, in the absence of decompression, they would be of very little value. The growth is evidently far advanced and more than likely inoperable to say the least.

**Autopsy Report by DR. MILLS:** The body is that of a white female, apparently 50 years of age, moderately well nourished.

Cranial vault was opened. The dura was somewhat thickened and adherent to the pia along the lateral margin of the superior sagittal sinus just anterior to the fissure of Rolando. The brain was removed including the entire medulla oblongata. External examination showed marked softening of the right temporo-sphenoidal lobe with flattening of the convolutions and thickening of the pia mater. There was a small lobe like hard protrusion, of apparently brain substance, simulating a growth on the anterior internal portion of the right temporo-sphenoidal lobe, extending inward towards the optic chiasma. Sections into the ventricle disclosed on the right side marked granular growth infiltrating into the corpus collosum and medially into and on the septum pellucidum. The general characteristics of this growth as far as can be determined grossly seemed to be of the nature of an infectious granuloma or glioma.

Sections into lateral ventricle shows lateral wall of both ventricles broken down by granular, soft, reddish, brown area extending irregularly into structure of the cerebrum. In one portion of the right ventricle there is quite a globular mass. Greater portion of this is very soft, friable and dark yellowish color. Microscopic sections showed fairly definite outline of this brownish mass from the more normal cerebral structure. Superficial portion was broken down, apparently due to lack of nourishment rather than inflammatory changes. Portions near the normal cerebral structure showed closely massed brown spindle cells with multiple fibril like projections, fairly vascular without definite fibrous stroma. This is evidently a glioma of a diffuse type infiltrating into the walls of both lateral ventricles. The origin is probably in the ependyma.

**RODENT ULCER.** Richard L. Sutton, Jr., M. D., Kansas City, Mo., Jour. of the Mo. State Med. Assn., Vol XXVII, No. 3, March, 1930, p. 103.

The term rodent is not scientifically used; it is

frequently used either for basal cell or prickle cell carcinoma of the skin, altho there is a marked clinical and histopathological difference in these two growths. After a thorough discussion of the various types of lesions which are sometimes called "rodent ulcer," and also a discussion of the various methods of treatment, the author concludes,—that the term, "rodent ulcer" should be discarded, and the correct term based on histopathology should substituted. Treatment should consist in the extinction of the neplastic cells in the manner which will give the best cosmetic results. Irradiation is the method of choice, and as between x-ray and radium, the latter is preferable, on account of the accuracy with which the dose may be applied.

**MALIGNANCY OF THE ORAL CAVITY.** C. M. Hamilton, M. D., Nashville, Tenn. Jour. of the Tenn. State Med Assn., Vol. XXIII, No. 1, March, 1930, p. 79.

Cancer of the mouth is curable, but to obtain the best results it is necessary to start treatment early. Palliation and insufficient treatment are worse than no treatment. Proper combination of methods offers the most success. Every case presents the double problem of the local lesion and the lymph drainage areas. The local lesion can be removed by excision, cauterization, electrocoagulation or radiation. The dual procedure of electrocoagulation and radiation is more effective in destroying the local lesion than either method singly. Treatment of the lymph glands is more important than treatment of local lesion. The result in unselected cases varies from 15 to 60 per cent with different authorities. Cancer of the tongue and floor of the mouth are the most unfavorable, while epitheliomas of the alveolar ridge and hard palate offer better prognoses.

**CIN-EX CAMERA STUDIES OF THE THYMUS IN INFANTS AND CHILDREN.** C. K. Halsey, M. D., and R. Q. DeTomas, M. D., Detroit, Mich. Jour. Mich. State Med. Soc., Jan., 1930, Vol. XXIX, No. 1, p. 25.

By means of the Cin-Ex camera of Jarre, it is possible to make as many as four exposures per second on a roll film, but in the series on the thymus in infants, reported, the average was about five exposures in two seconds. This method of study has shown that the thymus shadow as shown on one, two or three x-ray films cannot be taken as indicating true enlargement or hypertrophy. By studying a large series of exposures made on 20 or 30 feet of roll film, great differences in the width of the mediastinal shadow will be shown. The enlarged thymus is not as frequent as supposed, and many instances of supposed thymus enlargement will be found to be physiological changes due to respiratory phases. Conclusions drawn from single films showing a wide mediastinal shadow before treatment and a narrow shadow after treatment may be erroneous, and the difference be represented by respiratory phases and the difference between the heart in diastole and in systole.

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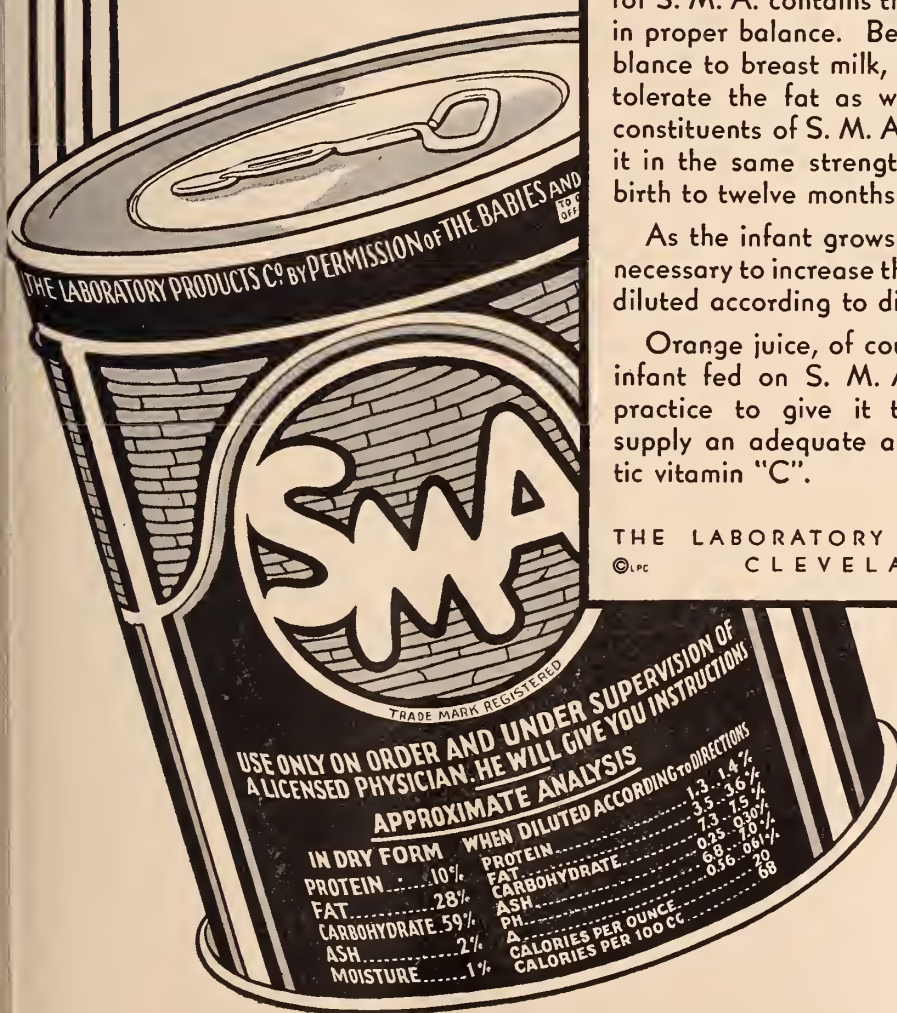
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## OUR DUTY AS DOCTORS TO OUR PATIENTS

JOSEPH MADISON GREER, M.D., F.A.C.S.  
Phoenix, Ariz.

(Address of the President-elect, before the Arizona State Medical Association, at its twenty-ninth annual session, held in Phoenix, Ariz., April 24 to 26, 1930).

Just why the subject of "Our Duty as Doctors to Our Patients" was chosen by me I cannot very well explain. Several subjects were suggested, none of which seemed to suit. They were either too scientific, or they involved phases which were either old and hackneyed, or which would be rather presumptuous on the part of a chairman of a Medical Association in a state like Arizona to discuss.

It is usually expected that the president will have made many promises before having been elected to office, and that in this address he will express to the assembly in flowery language these promises, and tell just how he is going to carry them out. He is also probably expected to tell the assembly just what wonderful things he is going to accomplish during his term of office, and how much better the Association is going to be for having been so fortunate as to have him at its head. This last year, however, it was different. Apparently, presidential timber was scarce, or not present, and the time for election came suddenly upon the Association, and it had not had time to think. In this unguarded moment an unknown individual was hurriedly nominated and elected, and it was not until afterwards that realization came that a president had been elected with no strings to him and without having had exacted from him any promises whatsoever.

Inasmuch as this has been done and I have made no promises and, technically, have nothing to live up to, I shall feel free to talk about whatever suits my fancy. There is

nothing to be lost, and should anything be gained in the minds of any of the members of my audience we will be just that much ahead.

In discussing our duty as doctors to our patients, this morning, I shall not dwell so much upon the scientific and artistic side of medicine as upon the humanitarian, or reasonable, or common-sense side. It is understood that the doctor is a scientifically trained man, and that he will give his patient the best scientific treatment. I wish to talk about some of the things that really mean much to our patients, but which, in our haste and scientific application of our craft, we frequently overlook or pay little attention to.

Usually it is the little things in life that make us happy or make us sad, that make us comfortable or make us uncomfortable, that soothe us or irritate us. The bigger things in life are important of course, but they are usually the sum of the smaller ones.

It does seem to me that the physician has a duty to his patient, in addition to the scientific and artistic practice of medicine, that will not only safeguard his patient's welfare, but will make the scientific application of the practice more satisfactory and more successful. Doctor Irvin Abell of Louisville, in an address before the Catholic Hospital Association in Chicago last year, had this to say: "The practice of medicine offers to the doctor a combination of intellectual and moral interests of unusual degree, affording opportunity for the development of the highest scientific mental acumen in adding to the sum and total of human knowledge and the employment of utilitarian and charitable impulses in contributing to the improvement in human welfare." In other words, there is something more than the mere cold scientific application of our knowledge and skill.



As we all know, medicine has undergone many changes in the past twenty-five years. From a scientific viewpoint more has been accomplished in that time than in any similar period in history. But with this increased knowledge there has come an increased responsibility for the doctor in the discharge of his duty to his patient. Of course, fundamentally, the moral principles underlying his obligation have not changed, but the channels through which this obligation is to be discharged have been both amplified and diversified. The duty of the doctor to his patient may be epitomized as one having as its basis science, education, humanitarianism, and just plain thoughtful human consideration, or common sense.

Relative to the Science in medicine: With the knowledge that has been, and continues to be gleaned from mother nature by the indefatigable workers in medicine, the practice has tended to become more and more a science as the years have gone by. Science is cold and inanimate; it has neither soul nor sentiment; it deals solely with definite cause and effect. Humanity, on the other hand, is fervent and spirited; it has ardent desires, and bitter rancor; while the rule of definite cause and known effect is applicable to but a part of its ailments. The development of scientific medicine is a long way ahead of its application, and this is due both to a lack of activity on the part of the profession in disseminating such knowledge (I may have more to say about that later), and to the ignorance and the incredulity of the laity in accepting it. Medicine is not, and cannot become, an exact science. Human beings are not guinea pigs, nor are they chemicals in a test tube presenting fixed reactions to disease. Nevertheless, the fundamental basis of medicine rests on science, since, in its latter aspect, it deals solely with disease.

It is the duty of the doctor to become conversant with the facts which the scientist and research worker have gleaned, and to apply these facts to the bedside in the treatment of disease. The medical schools of today give the student the knowledge accumulated by scientific medicine. With this knowledge and the experience of having intimate contact with patients and their diseases he is to gain wisdom. His duty to his patient bids him keep abreast of the times in the acquisition of further knowledge and the method of its application in the treatment of disease. The means at his disposal for doing this, and of which it is incumbent upon him to avail himself, are medical literature, medical societies, and

post-graduate work at the large clinics, hospitals, and medical centers. The advances in medicine are so great and so many that unless one utilizes those means of acquainting oneself with them, one is apt to fall short of his duty in providing the patient, who intrusts himself to the doctor's care, with treatment that embodies the present-day knowledge to which the patient is morally entitled.

Relative to Psychology in Medicine: Under this heading we might also say a word about the education of the public, for it is our duty as individuals to lose no opportunity to inform the public upon things medical. In the past we have been secretive, and medicine has been shrouded in too much mystery. As members of organized medicine it is our duty to formulate some plan whereby the public could obtain accurate and reliable information relative to standardized and most accepted practices in medicine, and also about the advances in medicine. To use an expression of the day,—organized medicine should advertise, and make the laity "medical minded." There is a very good article in the American Medical Association Bulletin by Dr. Farr of Minneapolis, entitled "How Shall the Layman Choose a Doctor?" This is a very important subject, and now, how does he choose a doctor? It seems to me that it is our duty as members of organized medicine to formulate some plan whereby the public may be instructed in making a proper choice of a doctor when one is needed. Almost every daily paper now has a medical column. Maybe the local medical organization could handle this problem through this column. Maybe it would be better for a committee from the American Medical Association to handle this rather than the local society. It has been suggested that a plan be worked out through the officials of the County Medical Society, after the outline of a definite policy by the American Medical Association, in which the public may be instructed that they can get definite help in their selection of a physician from these local officers. The difficulty of such a plan is of course that of treating the entire profession fairly as well as giving the public the maximum of safety and protection. It is the duty of each one of us to give this sufficient and serious thought, and then to act upon it, in order that some plan may be worked out that will help the layman choose a physician.

After this little digression we again come back to the physician's duty to his individual patient. It is our definite duty to conduct ourselves so as to inspire confidence

of our patients in ourselves. This is not only for own good,—although we will benefit thereby,—or for the good of the other members of the medical profession,—although they will be benefited thereby,—but for the actual good feeling and peace of mind of the patient, which will help him to recover from his illness all the sooner.

We should not only endeavor to inspire confidence in ourselves, but we should take particular care to inspire confidence in the hospital to which we send the patient, confidence also in the nurses who care for the patient, yes, confidence with everyone who comes in contact with the patient during the course of his care and treatment. If all doctors would exert an effort along this line it would no doubt prevent many individuals from consulting some cultist, or from indulging in some will-o'-the-wisp remedy, thereby losing valuable time, and perhaps a life.

If we confine our ministrations to such impersonal considerations as the scientific study of the patient's ailment, the history, the various laboratory and technical examinations leading to a diagnosis, and also to treatment, our sphere of usefulness will be restricted. Disease in man is affected by what we call "emotional life," and gives rise to a complexity of symptoms for which frequently no organic basis can be scientifically sustained. To dismiss patients in this category as not being ill may be justified from the standpoint of scientific pathology, but certainly they may not be dismissed if viewed from the equally important viewpoint of human psychology. It is perfectly possible, and many times happens, that we, in our enthusiasm for scientific medicine, and in our enthusiasm to become intimately acquainted with our patient's disease, remain total strangers to the patient. It may be granted that the treatment of disease from purely scientific viewpoints will suffice for the satisfactory cure of most patients. It can also be safely asserted that in many cases such impersonal treatment is subversive of the best interests of our patients, and may even interfere with the best results of our treatment. Moreover, such impersonal treatment does not always tend to inspire the most confidence in us as doctors, nor does it always tend to make our patients the most comfortable. We might say that the treatment of disease is scientific and impersonal, and the care of our patients is humanitarian and completely personal, and that our duty is to combine these two in proper quantities in order to secure the best results.

It would seem that most any of our pa-

tients would be much happier if we would show real personal interest in their troubles, and display friendliness, and evince sympathy with their ailments, rather than to take their histories, for example, in an impersonal and methodical manner, showing much more interest in filling our complicated case record sheet than in listening to the patient's story and manifesting a feeling of real sympathy toward them. We should remember that they are individuals in trouble and need help. In many instances it is just as important to study the patient and his surroundings, his emotional reactions, his fears and apprehensions, his hopes and aspirations, as it is to study his disease. Humanitarianism and its rational application upon a psychological basis constitute as definitely a duty of the doctor to the patient as does a scientific study and treatment of the malady from which he is suffering. In fact, he may be suffering as much from some of these other things as he is from disease.

Physical pain is to be relieved by the correction of the ailment producing it. Mental pain arises from dread, fear, anxiety, disappointment, remorse, obsessions, doubts, phobias, and psychoneuroses which have no organic basis, and yet which produce many functional disturbances. These are not infrequently preceded by injury or illness and result in long continued disability, presenting a rich field for mental suggestion, suggestive therapeutics, and psychotherapy. The value of hope, of a determination to live is one of the oldest facts of common knowledge. A change in mental attitude, a stabilizing of the will power accounts for many of the "cures" wrought by quacks and charlatans. Confidence constitutes most of the cure. Mind curing can never be an exact science dealing with fixed principles, with constant regular recurring facts, because it depends on such contingencies as the nature of disease and the personality of the one applying it. The objection might be raised that since these emotional disturbances constitute a rather large group, and since their treatment is psychological rather than medical, this phase of medicine should be handled by specialists. While we believe in specialism, we should not believe in too much specialism. We believe that a man should stick to his particular line of work, yet we do not anticipate much objection from those specializing in psychiatry if we practice a little humanitarianism, personalism, and sympathism along with our real specialty.

A diagnosis is no longer restricted to the dominant ailment from which the patient suffers. It must include a consideration of



the various departures from the normal. The correct appreciation and application of interest in the patient's psychology will, as a rule secure his confidence, aiding thereby in estimating the obstructions to his return to health.

Fortunately or unfortunately, the study and treatment of the sick has become so complex that the service of many individuals are required. It is our duty, when in charge, to cultivate such an attitude of tact, courtesy, affability, and a manifestation of cheerful interest in our patient's welfare, that our co-workers will evince a similar attitude, to the end that unfavorable interactions between the pathological process and the intellectual processes of the patient be obviated or reduced to a minimum.

The extent of the information we should give a patient regarding his disease is usually determined by his psychology. We usually believe in telling our patients about their ailments, and in trying to explain to them. The science of medicine permits of no equivocation as regards appropriate treatment; yet at times the art of medicine demands some equivocation in stating the character of the illness, if the patient is to be spared unnecessary mental anguish. I do not mean that the gravity of any illness should be dispensed with lightly. Nor do I mean that one should make direct misstatements. But I do mean that we should avoid the bleakness of utter hopelessness by being charitable, hopeful, and tactful in our expression, without saving too much, when we are face to face with one of the hopeless conditions that we so frequently meet. For us to tell a patient when he first comes to us that he has an incurable, hopeless malady would deprive him of that hope which springs eternal in every human breast. You may recall the advice which Oliver Wendell Holmes gives, in his essay, "The Professor", to those about making a choice of a physician: "Be sure you get one with a serene and cheerful countenance. A physician is not, or ought not to be an executioner; and the sentence of death upon his face is as bad as a warrant for the execution signed by the governor. As a rule no man has a right to tell another one by word or look that he is going to die. It may be necessary in an extreme case, but as a rule it is the last extreme of impertinence which one human being can offer to another."

I do not mean that we should be dishonest nor hold out false hope but a discussion with our patients with an attitude of hopeful uncertainty might many times add months of happiness to their lives. It is also our duty

to tell to some near friend or relative the absolute truth as it appears to us.

I would like to speak now for a few moments upon what might be called "Spiritual Therapy." Regardless of what our religious views may be, if any, we owe to our patients and their relatives certain moral considerations relative to religious practices. It has been said that religion has done more than any other one thing to make people rational in their lives and not merely the sport of their impulses and instincts. Whatever we may think of the profession of theology, the minister and the doctor working together unselfishly, are the greatest known factors and forces in the happiness and health of man. This religious side is much more important to the patient and his relatives in some sects than it is in others, and it is our duty to know this and respect it. We should never force our own religious beliefs or disbeliefs upon our patients but we should respect theirs. Even though we may not be religious ourselves, we may many times prepare for the introduction of the clergyman which will mean much mental comfort to our patient. Let us remember that religion is a vital aid to humanity, not only hereafter, but here as well. Religious faith pointing to a life of blessedness and immortality is a power in the lives of some that assuages the keenest sorrow and the greatest suffering and also makes the avenue of death smooth and pleasant. If we do not recognize this, or if we feel a contempt for religious practice, it may be said that we lack the true power of observing and the A B C of moral philosophy.

In cases of sudden and dangerous illness we should be especially careful to give timely warning to all those who have most interest at stake. Friends may have to be summoned, highly important wills executed, and urgent business arranged. And sometimes the sick one, whose past may have been of the earthy, may desire time to reflect upon the great eternity, and to set his spiritual house in order.

We should respect the religious beliefs of each and every patient. In this locality many patients of the Latter Day Saints faith are seen, also Roman Catholic patients are encountered in every community, and we should be familiar with the duties of a physician towards these patients.

When in attendance upon a Catholic patient be especially careful, when danger appears, to tell the friends without delay, that they may summon a priest to give the sufferer the last sacraments. One of the seven sacraments of the Catholic Church is that

of Extreme Unction. They believe that it purifies the soul of the dying from any sin not previously expiated through other sacraments, and that it gives the sufferer strength and grace for the death-struggle. The Roman Catholic Church teaches that moral responsibility begins at the age of reason; therefore, Extreme Unction is necessary for all who have attained that age.

Another of the seven sacraments of the Church of Rome is the Holy Eucharist, which is believed to contain Christ's whole Being: His Body, Soul and Divinity. It may be frequently administered in all cases of sickness provided the patient has sufficient consciousness to make a full confession. If the nature of the illness is likely to render our patient unconscious we should be careful to inform the family beforehand so that the priest may be sent for and the Sacraments administered before the reasoning powers are obscured.

Baptism is another sacrament we should be careful to administer, or have administered, to a child of Catholic parents, if it is believed to be in danger of dying. It is not imperative that this be administered by a member of the Catholic faith. When there is reason to doubt the viability of the child in the process of delivery it may be baptized upon the presenting part. Those things mean much to some of our patients and it is manifestly our duty to be considerate of their feelings and beliefs.

In the Mormon religion there are little details of the attending physician that are different from the others. By way of parenthesis I should like to correct a statement we frequently hear that the Mormon Church requires their people to call physicians of their own faith. They teach their people to ascertain, if possible, the physicians having the best training, and therefore the ones in whom they would have the most confidence. This, you see, places their system of selection of a physician on the same basis as that of any other church. Coming back to the details that a doctor should know relative to their faith, they believe, as a religious ceremony, in the patient being administered to by the Elders of the Church. Their Biblical authority for this is found in the fifth chapter of James, 14th and 15th verses, which read as follows: "Is any sick among you? Let him call for the elders of the church; and let them pray over him, anointing him with oil in the name of the Lord; and the prayer of faith shall save the sick, and the Lord shall raise him up; and if he have committed sins, they shall be forgiven him." This corresponds to the prayers of any

church and makes for peace and quiet in the mind of the patient. It is not a religious treatment taking the place of medical treatment, as has been stated, for in this ceremony they pray that the physician may be given skill and understanding, in order that he may be better able to treat the case. It is a courteous thing for the physician and the nurse to leave the room at this time. It matters not whether they are members of the Mormon church; it leaves a better atmosphere for prayer if they leave the patient alone with the Elders for the duration of the ceremony. There are certain sacred articles and symbols in various religions and with the Mormons the Garment is sacred, and should be treated with proper consideration.

It would seem to me that there are occasions, with patients of this faith, when we should ask them if they would not like to have us send word to the Bishop, and the Elders to come and see them. This might do them as much good as the ultra scientific treatment that we might be administering to their bodies. At any rate, they would not think that their doctor was scoffing at their spiritual desires as "religiously foolish," as a patient of mine once said when she asked me if I would object if the Elders came to administer to her. It would free their minds of the possible conflict of the mind of the one in whom they had the most confidence, and they would not feel him unsympathetic to their religious beliefs. And, as I said before, these little things make for peace of mind to our patients, and it is not unreasonable to think they make for more speedy recovery.

I would now like to say a few words about the economics of medicine, and its relation to the duty of the doctor to his patient. Recently there has been much written about the "high cost of medical care." A committee has even been appointed to investigate this matter, but if they have found a remedy they have not divulged the fact. However, I am sure there is much we as doctors can do to allay the patient's mind along this line. We are not commercially minded. Therefore, we are often careless about things financial. But we should remember that to our patients who expect and want to pay their bills, the high cost of treatment is frequently a great mental worry. I think we have all seen some of our patients worry until it interfered with their proper and rapid recovery. To indulge a slight exaggeration for the sake of making my point it might be said that "it would profit our patient but little to save his life from a serious malady,



just to have him worried to death" by an overwhelming bill for hospital, nurse, laboratory and professional services. Moreover, a little attention to this on our part would mitigate against such a situation very greatly. Why place our patient in a fifteen-dollar room when one at half the price would do just as well, and when we know very well he cannot afford the former? Why place the special nurse with him when he cannot afford it, and when floor nursing will do just as well? Many nurses have been embarrassed at staying on cases when they knew the patients could scarcely afford to keep them, and also when they knew the patients could get along very well without their services. We have a great deal of laboratory and x-ray work done to satisfy our own curiosity, or to show our colleagues that we work up our cases very scientifically, and this adds very little to the adequate care of our patient. It is true we like to, and we should, work up our cases properly and scientifically, and completely, but many times our patients cannot afford it. If he cannot afford it, and does not pay it, and we could get along without it, we can be accused of adding to the high cost of medical care.

Many times, also, our patients are annoyed greatly by some clerk at the hospital desk trying to adjust proper financial arrangements, when a little discussion on our part with the patient beforehand, and a little note from us to the hospital regarding the patient's financial status, and what he desires, or needs, would facilitate matters greatly, and make for the better contentment of our patients. Usually the experience of going to a hospital is a new one to our patients, and a little information from us relative to hospital practices will place them at ease and make for less mental irritation, and uneasy anticipation. If we would inform our patients about hospital charges, in a general way, they would not feel unkindly toward the hospital when they receive their statements, or when they are informed of rates at the admission desk. By ascertaining what our patients can pay, and seeing that they pay this perhaps we can handle this ghost, "the high cost of medical care."

In closing my remarks, I realize that the subject has been covered very inadequately. I imagine that listening to me has been like reading the dictionary in that the subject has been changed so often. However, to sum up our duties as doctors to our patients: I firmly believe they imply more than the impersonal practice of scientific medicine. If we will exercise effort to inspire confidence if we will consider our patients from a psy-

in ourselves and in those who work with us; chological viewpoint as well as from a physical; if we will consider them as spiritual beings and respect their religious beliefs; and, finally, if we will consider that they have an economic status to maintain, we will be more adequately carrying out our duty as doctors to our patients.

## THE TREATMENT OF DIABETES BY THE GENERAL PRACTITIONER

ROBERT STANLEY FLINN, M. D.  
Prescott, Arizona.

(Read before the Arizona State Medical Association at Prescott, April 19, 1929.)

There are, according to Joslin, approximately "a million members of the diabetic club of America." Inasmuch as a minority of these are treated by the specialist there remain several hundred thousand diabetics who must look to the general practitioner for their medical supervision. The statement is often made that it is quite impossible to treat diabetes through office practice but if the physician will adopt a definite system whereby a certain part of the treatment is outlined at each successive office visit he will find that he will be able to treat successfully the majority of cases of uncomplicated diabetes that come to his office.

Fundamentally the diabetic suffers from a hypofunction of the internal secretion of the pancreas. The specific substance, called insulin, accelerates glycogen storage and the oxidation of glucose. In diabetes, insulin production being at fault, the process of glycogen storage and glucose oxidation is inter-

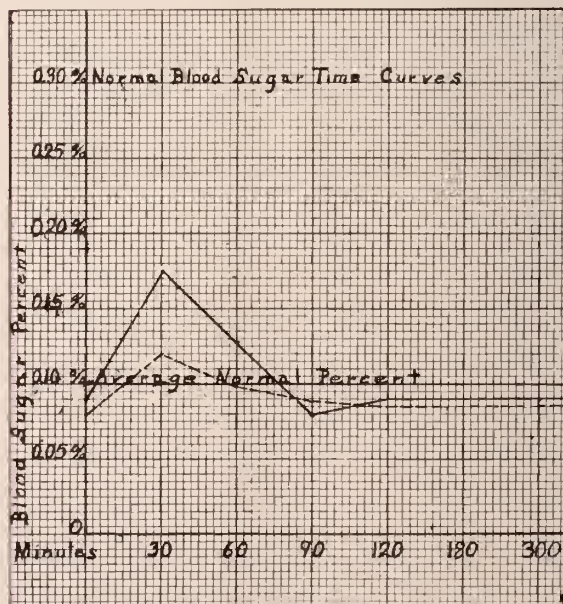


Chart I.



ferred with. Sugar therefore accumulates in the blood, leads to hyperglycemia and having crossed the threshold of renal excretion appears in the urine.

In normal individuals the level of the sugar in the circulating blood remains remarkably constant ranging from 0.08 to 0.12 per cent or from 80 to 120 milligrams of glucose per 100 c.c. of blood. There are two factors which tend to elevate this blood sugar level and two factors which tend to lower it. Absorption of glucose from the alimentary tract and the conversion of glycogen back into glucose naturally raise the blood sugar level, while the oxidation of glucose by the tissues and the conversion of glucose into glycogen lower the blood sugar level.

In Chart I are shown the glucose time curves in two normal individuals. One hundred grams of glucose were given by mouth and blood sugar determinations were carried out at thirty minute intervals. Simultaneous urine specimens were obtained and examined for glucose. Following the ingestion of glucose the blood sugar rises rapidly until in thirty minutes the maximum is reached. Soon, however, there is a rapid conversion of that glucose into glycogen with the consequent fall of the sugar level to normal or slightly below. Inasmuch as the "peak values" did not exceed 0.18 per cent, the threshold for excretion of sugar by the kidney, no glucose appeared in the urine.

Chart II shows the glucose time curve in a case of mild diabetes. Since the factor of ab-

sorption of glucose by the alimentary tract is unimpaired there is a rapid rise of the blood sugar level following the ingestion of 100 grams of glucose. The organism being unable to store glycogen in the normal manner the blood sugar level falls slowly, being directly dependent on the amount of impairment of the pancreas. Inasmuch as the blood sugar level exceeded 0.18 per cent, glucose appeared in the urine.

In Chart III is shown a sugar curve in a case of severe diabetes. The blood sugar level is consistently above 0.18 per cent so that we expect a constant glycosuria. You will observe that after three hours the blood sugar level is still elevated, pointing to a severe degree of pancreatic damage.

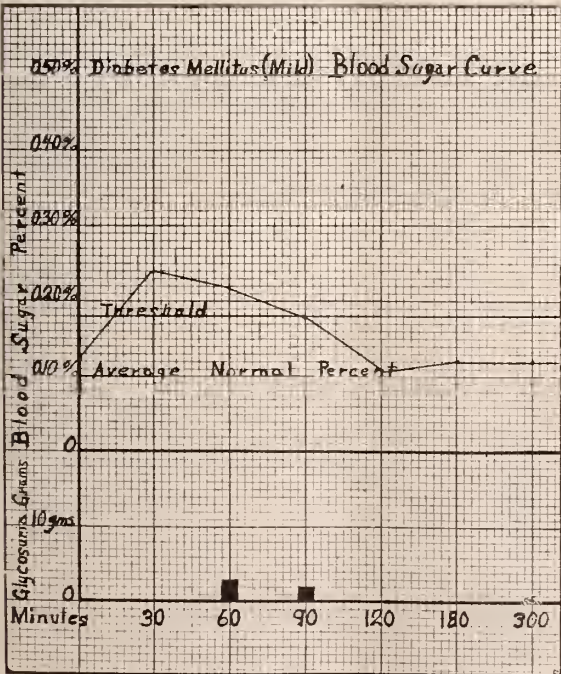


Chart II.

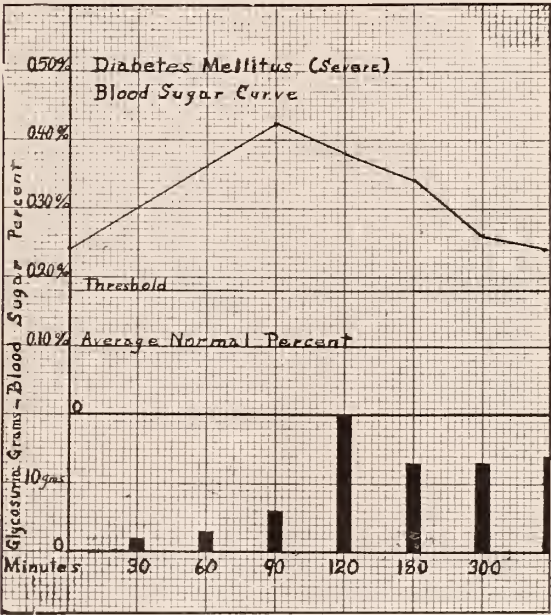


Chart III.

Frequently one sees cases of sugar in the urine which present none of the common symptoms of diabetes such as thirst, frequency, loss of weight, etc. Reduction of the carbohydrate intake usually fails to alter the glucosuria appreciably. Blood sugar time curves (Chart IV) show this condition to be one of renal glycosuria. The blood sugar level remains within normal limits but there is a persistent glycosuria which leads us to the conclusion that there is a lowered threshold for sugar in the kidney. No carbohydrate restriction is indicated, as these cases rarely if ever develop true diabetes.

The treatment of diabetes may be said to consist of two equally important phases:

1. The education of the patient.
2. Regulation of the diet.

Although not generally considered so, the



education of the patient is equally as important as regulation of the diet. A great many failures in the treatment of diabetes are due to lack of knowledge on the part of the patient. It is not enough simply to give a patient a fixed diet card. He must be made to take an intelligent interest in his condition. He should be told in simple terms the nature of diabetes, the great importance of diet, the absolute worthlessness of drugs, the nature

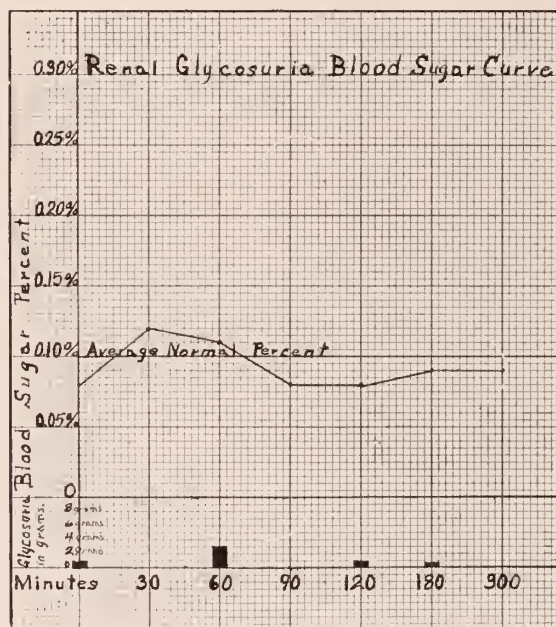


Chart IV.

of the various foodstuffs, and the procedure for the examination of the urine for sugar and acetone. In addition to this the patient should be encouraged to learn something about the condition diabetes by reading some diabetic manual such as Joslin's.

The treatment of diabetes, according to Allen, "consists chiefly in the regulation of the diet so as to keep it within the functional capacity" of the pancreas. In other words, the weakened member is the keynote of the treatment in diabetes just as it is in fracture of the arm or tuberculosis of the lung.

The final objective in the treatment is reached when the patient has been placed on a diet on which he maintains his weight under normal conditions. This diet must contain enough protein to keep the patient in nitrogen equilibrium. The urine must be free from sugar and acetone. In a large number of cases this can be accomplished without the use of insulin. Every effort should be made to place a patient on a maintenance diet without the use of insulin as the treatment is simplified greatly thereby.

The diet should be kept as simple as pos-

sible. In these days of bountiful carbohydrate diet it is well to remember that Joslin's "Old Guard's Diet" was used for many years with notable success. It consisted of four large portions of five per cent vegetables, two small oranges, half pint of medium cream, two eggs, four strips of crisp bacon, one moderate sized portion of meat and three portions of butter. It yielded 59 grams of carbohydrate with a total caloric value of 1463.

Most authorities agree that a diabetic patient should first be put on a very low carbohydrate diet in order to clear up the glycosuria and allow the pancreas to rest as much as possible. The diet can then be gradually raised until the patient is receiving from 25 to 50 per cent more calories than he requires for his basal metabolism.

In order to simplify the routine handling of diabetics by the general practitioner, Dr. E. H. Mason, of Montreal, has devised the following scheme:

**FIRST VISIT:** At the first visit the physician should first make the diagnosis, look for etiological factors such as focal infections, gall bladder disease, etc. The patient should then be told about the nature of diabetes, how dietary control is the only treatment, how he must learn to live under a different regime. He must be impressed with the fact that the responsibility rests with him, and not with the doctor. The patient should then be taught to examine his urine for sugar by Benedict's method and should be given a report to fill out each day stating the diet which he has eaten and also the results of the daily urine examination. A card containing a list of five and ten per cent carbohydrate vegetables and fruits should be given to the patient, together with a diet list for the next three days. He may be allowed an average amount of:

1. Meat or fish (any kind)
2. Eggs, cream, butter
3. Five and ten per cent carbohydrate vegetables and fruits
4. One glass of milk a day
5. Oatmeal or shredded wheat biscuit
6. One slice of bread per day.

**SECOND VISIT:** At the end of three days the patient returns for his second visit. He brings with him the report filled out. If he is free from sugar the case is probably mild. On the other hand if glycosuria persists the case is probably severe. The patient then explains the instructions given him at the first visit and is given his first lesson in food values. He is told of the unit measurements such as the gram, the cubic centimeter and the calorie. A table containing the

values of common foods is used and the patient asked to make a simple calculation such as, "How many grams of fat in 50 grams of butter?" and also, "How many grams of butter will make 50 grams of fat?"

#### RULES FOR FIGURING DIETS

Rule 1. When you have any amount of food and want to find out protein, fat, or carbohydrate content:

Amount x per cent value in food

Divided by 100

= gms. of P, F, or C H O in food.

Example: How many grams of CHO in 90 grams of onions?

$$\frac{90 \times 9}{100} = \frac{8.1}{100} = 8.1 \text{ gms.}$$

Rule II. When you know per cent of value of food and want to find out number of grams of food to weigh to make a definite number of grams of C H O, P or F:—

Take:

Gms. wanted x 100

Percentage value

= No. of grams of food that will contain desired amount of P, F or C H O.

Example: How many grams of cabbage will contain 7 grams of CHO?

$$\frac{7 \times 100}{5} = \frac{700}{5} = 140 \text{ grams of cabbage.}$$

Next the patient is taught the ferric chloride test for the ketone bodies. The diet for the next three days is then given. It is the same as at the first visit except that bread, catmeal and ten per cent carbohydrates are eliminated.

THIRD VISIT: The patient returns again in three days, and reviews the instructions of the last visit. He then calculates a simple diet for one meal containing protein, 20 grams; fat, 40 grams, and carbohydrates, 20 grams. In balancing the diet the carbohydrates should be calculated first, the protein next and the fat last.

SAMPLE MEAL (breakfast, P. 20, F. 40, CHO 20.

Food	Amount	Protein	Fat	CHO
Grapefruit .....	80	0	0	4
Oatmeal (cooked) .....	100	3	0	12
Cream, 15 per cent .....	100	2	15	4
Egg .....	1	7	5	0
Muffin .....	1	2	11	0
Butter .....	11	0	9	0
Bacon, crisp .....	60	6	0	0
Total .....		20	40	20

The patient is told to figure the following diet at home: P.60; F.150; C H O. 60, one-third of which is to be used at each meal. For the next three days he should return to his first day's diet except that the bran muffin should be substituted for the bread.

#### DIABETIC MUFFIN

- 1 cup boiled bran
- ½ teaspoon baking soda (level)
- ½ teaspoon salt. No food value
- ¼ teaspoon cinnamon (if desired)

	Protein	Fat	CHO
1 whole egg .....	7.5	5.3	.....
1 egg white .....	4.0	.....	.....
Butter, 70 grams .....	.....	59.5	.....
Buttermilk, 80 c.c. ....	2.4	0.4	3.8
Total .....	13.9	65.2	3.8

Bacon fat 60 grams may be substituted for butter grams.

Method: Boil bran in the usual way. Then dry by placing in the oven.

Melt butter and add to bran. Then add the buttermilk in which the baking soda has been dissolved. Add beaten egg yolk and salt. Lastly, fold in the well beaten egg whites.

Bake in greased muffin tins, dividing above amount into six.

	Protein	Fat	CHO
Each muffin has for value....	2	11	0

#### A METHOD TO RENDER BRAN FREE FROM CARBOHYDRATE BY BOILING

Two cups of feed bran and two quarts of water for the first and second boiling.

Two cups of feed bran and one quart of water for the third boiling.

Put the bran and the two quarts of cold water in a large kettle and heat to boiling, and boil for fifteen minutes. Then pour the bran on to a sieve, over which one thickness of gauze has been placed. Then run from a faucet or pour cold water through the sieve, for one minute. Place the bran in two more quarts of cold water, back upon the stove and again boil for fifteen minutes (second boiling). Repeat the process as at the end of the first boiling. Then boil for the third period of fifteen minutes, using one quart of water. Drain, and dry the bran out in a warm oven.

FOURTH VISIT: At the fourth visit the patient is able to work diets and is given scales or measuring cup for work at home. A diet based on the patient's weight is ordered: protein, one gram per kilogram of weight; fat, one gram per kilogram of weight; carbohydrate, one-half gram per kilogram of weight (One kilogram is equivalent to 2.2 pounds.) If at this time the patient is still excreting sugar and it is decided to use insulin, the patient should be given instructions with regard to dosage, sterilization of needle, and the dangers of hypo-glycemia. The patient and the other members of his family should be familiar with the symptoms and treatment of "insulin reactions." If, from two to four hours following too large a dose of insulin, he should suddenly become hungry, weak, restless or nervous he should immediately take orange juice or sugar to counteract the effect of the insulin. In fact every patient taking insulin should carry with him at all times 10 grams of powdered glucose to be used in case of an insulin reaction.

FIFTH VISIT: In three days the patient returns for the fifth visit. He is then placed on a maintenance diet and is given from 60 to 70 grams of protein per day or about one gram per kg. of body weight, 150 to 170 grams of fat per day, depending on the oc-



cupation, and from 50 to 100 grams of carbohydrates depending on the severity of the diabetes.

The patient is now standardized on a maintenance diet and has been told something of the nature of diabetes. He has been taught the necessity of diet, the preparation of a bran muffin substitute, the examination of urine and the administration of his own insulin.

He has further been impressed with the fact that he should not rely on his own management and judgment of his case but should consult his physician at regular intervals. He should be warned of the dangers of acidosis and the symptoms by which it is recog-

nized. In a prominent place in his bed-room, the diabetic patient should have displayed:

Joslin's Rules for Patient with Acid Intoxication  
Joslin—"Diabetic Manual," Lea and Febiger, Philadelphia, 1929, Page 121.

1. Send for the doctor.
2. Go to bed.
3. Keep warm; flannel nightclothes. Heaters, but put a blanket about the heater to avoid burns.
4. Take an enema. The enema clears the lower intestine so that salt solution, a teaspoonful of salt to each pint of water, can be given later by the rectum in case liquids are not retained by mouth. Prepare three pints of boiled water as the doctor may wish to use it when he arrives.
5. Liquids. A cupful an hour. Hot water, tea, coffee, broths, water-oatmeal gruel, orange juice.
6. Secure a nurse or someone in the family who will spend her entire time caring for the patient until the doctor arrives.

#### DIET LIST

Foods arranged approximately according to content of carbohydrate. VEGETABLES (fresh or canned). (Joslin).

5 per cent	10 per cent	15 per cent	20 per cent
Lettuce	String beans	Green Peas	Potatoes
Cucumbers	Pumpkin	Artichokes	Shell beans
Spinach	Turnip	Parsnip	Baked beans
Asparagus	Squash	Canned Lima Beans	Green corn
Rhubarb	Beets		Boiled rice
Endive	Carrots		Boiled macaroni
Marrow	Onions		
Beet Greens	Green peas, canned		
Dandelion Greens			
Celery			
Tomatoes			
Brussel sprouts			
Cauliflower			
Egg Plant			
Cabbage			
Radishes			
String Beans, canned			
Artichokes, canned			
FRUITS			
Ripe Olive	Watermelon	Raspberries	Plums
20 per cent fat	Strawberries	Currants	Bananas
Grapefruit	Lemons	Apricots	Prunes
	Cranberries	Pears	
	Peaches	Apples	
	Pineapple	Huckleberries	
	Blackberries	Blueberries	
	Gooseberries	Cherries	
	Oranges		

#### DISCUSSION

DR. W. WARNER WATKINS, Phoenix—In formulating the deitetic treatment of diabetes, and in estimating the importance of glycosuria, it is well to bear in mind the source and destiny of the sugar.

The main source of sugar in the body is the carbohydrate foods, starches and sugars. By the hydrolytic action of intestinal ferments, carbohydrates are brought to the comparatively simple stage of glucose and absorbed as such into the mesenteric veins and thence through the portal circulation into the liver. The liver takes the glucose molecules and seals them together in bundles of six, or hexoses of glycogen. Under normal conditions of health, on normal diets this glycogen remains stored in the liver, and that which is eaten at each meal is swept on into the circulation to be burned, or stored in the subsidiary reservoirs of muscle tissue.

The modern conception of treatment of diabetes

takes into consideration, as an important factor the origin of glucose from protein food, as well. A glance at the process of breaking up of glucose in its metabolism in the body, in comparison with the possible synthesis of amino acids into glucose, will show what a simple process this would be for a marvellous chemical laboratory such as the liver cells are.

Glucose is undoubtedly broken up into lactic acid and acetic acid in the combustion processes of the tissues. Glucose can just as easily be built up from these same acids. When the proteins are digested, they are absorbed into the portal circulation as amino acids, among which glycine and alanin are the chief representatives. Glycine is amino-acetic acid and alanin is amino-lactic acid,—made by inserting the amine radical into these acids. One of the important functions of the liver is its ability to de-aminize amino acids. When the amine radical

is removed, it is but two steps further to reconstruct acetic acid or lactic acid, and then glucose. This is undoubtedly an important function of the liver and an important source of glucose in the body. It is the reason why we must have a low protein diet, as well as a low carbohydrate diet in treating diabetes, because as soon as the usual source of glycogen is reduced beyond a certain point, the liver will begin to replenish its supply from the amino-acids coming through it from protein food.

At the meeting of the Maricopa County Medical Society, held in Phoenix on May 6, 1929, Dr. Flinn read this paper, and the following discussions on some other phases of diabetes were given.

#### ETIOLOGY AND PATHOLOGY

Dr. J. H. Patterson, Phoenix

This disease is one which is characterized by an excess of sugar in the blood and a more or less constant output of glucose in the urine on a normal carbohydrate diet. This is not a very satisfactory definition because it does not mention any of the causes and we really know little or nothing about the cause, or causes, of this dreaded disease. However, there has been great advancement made in the treatment and handling of the disease, and our knowledge has been widened as regards the predisposing factors, among which we may mention age, sex, race, heredity, obesity, diet, nervous strain, arteriosclerosis, syphilis, pregnancy, gout, acute infections, affections of the bile ducts and disorders of the pancreas.

According to available vital statistics, diabetes is apparently more common today than it was a few years ago. Perhaps this is due to more frequent urinary examination, better blood work, a more thorough understanding of the disease and better education of the public and the doctor.

Let us consider each of the above mentioned factors and try to bring out the influence each of these may play in the inception and prolongation of diabetes.

**Age:** We find the disease most frequently in the fifth and sixth decades of life, though no age is exempt. Joslin reports that four to seven per cent of his cases occurred during the first ten years of life.

**Sex:** Most authorities are in accord that the male is more prone. However, in reviewing statistics, various individuals differ. Mosenthal finds that, in the dispensaries, there is a preponderance of women. He thinks that perhaps the men generally will not come for treatment until they are so sick that they must enter a hospital ward, and that, in private cases, the male predominates.

**Race:** The Hindus in India and the Jewish race seem to be most subject to the disease. In the dispensaries of Baltimore and New York, the fact that the Jewish race is so susceptible has been clearly demonstrated. Diabetes occurs in the colored race but no accurate data has been brought forward as to whether they are more susceptible than the white race.

**Heredity:** There is no doubt but that heredity influences this disease. Von Noorden and Pleasants have both reported extensive family histories in substantiation of this statement. Some authors note that the onset of diabetes manifests itself at an earlier period in each successive generation. It is not uncommon in brothers and sisters. Joslin looks upon his cases of heredity diabetes with favor as they have most frequently been mild and he considers it a favorable omen.

**Diet:** It is doubtful if this plays any part in the etiology of diabetes. However, some have tried to show that an excessively high carbohydrate diet or rich protein diet—due to the conversion of protein to carbohydrate, protein yielding approximately sixty per cent carbohydrates—has had a bearing on susceptibility to diabetes.

**Obesity:** There is no proof that obesity has any influence. The relation between diabetes and obesity is purely an empirical one. Undoubtedly some fat patients, or some who have been fat, suffer from diabetes. In older persons the malady as a rule is mild and in younger individuals some very severe cases develop.

**Nervous strain:** Emotional stress frequently brings on glycosuria. And it is undoubtedly true that, in cases where diabetes has been latent and the patient has had a severe nervous strain or shock, impairing his ability to handle carbohydrates, as above mentioned, the patient may readily develop diabetes.

**Arteriosclerosis:** This has been thought to be an etiological factor, the supposition being that inhibition of the blood supply to the pancreas interferes with its function. It is not at all uncommon to find arteriosclerosis present with diabetes in older patients, as the former is essentially a disease of old age and the latter is most common in older people.

**Syphilis:** The proof that this is an etiological factor would be the therapeutic test, and, we are sorry to say, only in rare instances has anti-syphilitic treatment proven of any value.

**Pregnancy:** Joslin does not think that it can be accepted as proven that pregnancy aggravates diabetes. Diabetes may make its appearance during pregnancy, and some authorities believe it to be aggravated by pregnancy. Frank says that pregnancy increases the permeability of the kidney to sugar and that renal glycosuria is not common.

**Gout:** This for years was considered in a forerunner of diabetes and an etiological factor. But gout in this country is so rare that we hardly see any pronounced relation.

**Acute Infections:** We all know that even a slight infection causes a diminution in carbohydrate tolerance, and more virulent infections may cause less tolerance.

**Affections of the Bile Ducts:** It is not uncommon to get a history of gallstones in diabetes. It can easily be understood that an occlusion of the distal end of the common bile duct, either by stones or other causes, could cause a back flow of bile into the pancreas, with consequent destruction of pancreatic tissue, including the isles of Langerhans. Infections of the bile system could cause the same condition. There are cases on record giving a history of jaundice preceding diabetes.

**Other Glands of Internal Secretion:** Over-activity of hypophysis, adrenals, or thyroid will cause a decrease of sugar tolerance, with consequent glycosuria. However, the etiology of the glycosuria is different from those of diabetes mellitus. There have been numerous observations, including the classical experiments of Von Mering and Minkowski, substantiating the belief of the double function of the pancreas, that of external secretions aiding in the digestion of the carbohydrates in the intestines, and an internal secretion from the isles of Langerhans.

In animals complete extirpation of the pancreas brings on a clinical picture identical to that found in diabetes of man; whereas, tying off of the pancreatic duct alone does not alter the picture, neither does transplanting or partial extirpation, leaving



about one-tenth of the gland present, modify or give symptoms of diabetes. Further study points to the isles of Langerhans as the probable source of this internal secretion.

We are greatly indebted to Opie and his co-workers for demonstrating the frequency of lesions of these structures in diabetes.

In diseases of the pancreas, including cancer, calculus, acute and chronic pancreatitis, we do not always find glycosuria. McCallum observes that, in ligation of the pancreatic duct, the isles of Langerhans are the last destroyed in the consequent destruction of the pancreas, diabetes not manifesting itself as long as the isles remain intact.

Our knowledge of the pathology in diabetes is not very extensive. The pancreas shows no macroscopic changes. Microscopically, there may or may not be an interstitial fibrosis. In the islands of Langerhans there is an absence of the specific granules and the cells show changes. In the kidneys there is generally a diffuse nephritis with fatty degeneration. Hyaline changes are often found in the tubule epithelium, particularly of the descending loop of Henle.

The liver also commonly shows fatty degeneration and enlargement. When the so-called diabetic cirrhosis is present, the liver is enlarged and sclerosed and cachexia develops with melanoderma; dilated stomach and duodenum with colonic stasis are commonly found.

The lungs show great changes; acute bronchial and lobar pneumonia commonly terminating in gangrene, often found. Tuberculosis is not an uncommon complication. We may also get a fat embolism of the pulmonary vessels occurring with diabetic coma.

The heart is usually hypertrophied; endocarditis is rare and myocarditis is common.

In the central nervous system, the changes are not constant. A secondary neuritis is not rare, and sometimes changes occur in the posterior column of the cord, similar to those found in pernicious anemia.

Summing all this up, it must be admitted that the actual cause or causes of diabetes are not yet within our grasp. However, we must recognize that all the factors mentioned above must be considered and remembered in the treatment and handling of diabetes.

Those of us who do not neglect or overlook the factors of emotional or nervous strain, obesity, and the disorders of the intestinal secretions, will get much better results with our patients.

#### DIABETIC GANGRENE

Dr. S. I. Bloomhardt, Phoenix

An interesting study, gangrene occurring in the course of diabetes and the comparison of its influence on the mortality rate of the disease before and after the days of insulin.

In 1921, at the Montreal General hospital, 1,016 patients were observed in the diabetic clinic and 3.5 per cent of these had gangrene. It was the chief contributing cause of death in the disease. From 1921 to 1922 there were 200 patients with 2.8 per cent gangrene. The deaths from all causes during these two years were 12 per cent and of these 12 per cent 16 per cent were due to gangrene. In 1923 and 1925 there were 600 patients and 4.6 per cent had gangrene. During this period, the mortality was only 3.8 per cent, but of this mortality 39 per cent was due to gangrene. Thus we see that although the death rate in diabetes has decreased since the use of insulin, the incidence of gangrene has not decreased and it accounted for a very large percentage of the total mortality of the disease.

Undoubtedly this was due to the fact that other conditions formerly contributory to the death rate, such as surgical complications, coma, etc., are now fairly well controlled with insulin. In 1922, just before the advent of insulin, the death rate from all causes was approximately 8 per cent of the total number of diabetics. In 1925, it had fallen to one per cent.

Rabinovitch studied 1,000 cases and he compares this with a group of 2,000 cases of Joslin. The incidence of gangrene in the two clinics is practically the same. The sex incidence is the same,—about twice as many males as females. Average age about the same,—61 years. In both groups, 3,800 cases, 25 per cent of all diabetics past 70 years developed gangrene. Syphilis plays a role; with syphilis the incidence of gangrene is about five times as great as in those diabetics not having syphilis. The extremity of choice is the left foot.

Rabinovitch's idea of treatment embraces, (a) prevention, (b) treatment of early gangrene, (c) treatment of late gangrene. Preventive treatment rests with the internist. Treatment of early gangrene has been varied: rest, with dietary and insulin. Buerger's exercise, hot and cold baths, alternately, radiotherapy, and decortication of the blood vessels have all been followed by good results.

When gangrene has developed beyond the state of recovery, he divides them into two classes: those demanding immediate operation and those in which delay might be possible. In the presence of septicemia, immediate removal of the limb. The postponement of the operation is a more difficult problem to solve. If, in spite of local conditions, the urine can be kept sugar free and blood sugar normal, operation may be postponed until such a time as the surgeon feels the risk will be minimized, but if the diabetes cannot be controlled, immediate operation is necessary. Always recalling elderly diabetics do not react to insulin as readily as younger subjects and also that gangrene tends to neutralize the effect of insulin. Once the gangrenous limb is infected, this adds greatly to the difficulties and enormous doses of insulin may have no effect whatever. The site of amputation is purely a surgical problem, the presence or absence of infection, the anesthetic to be used, the effectiveness of insulin in this patient or that, age, condition of heart, kidneys, etc. The mortality following amputation at the ankle appears to have been the same as that following amputation above the knee. Removal of one toe or part of one toe in the majority of cases demanded a second operation. Disarticulation at the knee joint appears to have been exceptionally fatal.

**CHOLECYSTOGRAPHY.** R. T. Wilson, M.D., F.A.C.R., Temple, Tex. Texas State Jour. of Med., vol. XXV, No. 10, Feb., 1930, p. 668.

Author uses chiefly the oral method. During the three year period of 1926-1928, 2,112 examinations of the gall bladder have been made, this representing 7.7 per cent of all x-ray examinations made, as contrasted with 1.1 per cent (255 examinations) during the preceding five years. Of the 2,112 cholecystographies, 53.5 per cent were classified as cholecystitis, and 5.1 per cent of these showed calculi. In a group of 201 operations, positive evidence of gallbladder disease had been demonstrated by cholecystography with oral administration of the dye in 75.5 per cent of the cases. No response, slight response and irregular cholecystograms are evidences of diseased bladder and ducts. The strawberry gallbladder showed as abnormal to the dye test in fifty per cent of the operatively proven cases.

# THE RESORCINOL FLOCCULATION TEST IN PULMONARY TUBERCULOSIS IN COMPARISON WITH THE RED BLOOD CELL SEDIMENTATION TEST IN A GROUP OF PATIENTS AT THE FORT STANTON SANATORIUM, NEW MEXICO.

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(Read before the Pecos Valley Medical Association, at Roswell, N. M., in October, 1929.)

There have been many articles written on this subject in European countries, especially in France, where the test was originated by Vernes. Most of the literature has been favorable, but occasionally conflicting results have been reported. The original Vernes test depends upon the optic density of the patient's serum after it has been treated by a resorcinol solution and the readings are done by means of a photometer. Very little work has been done in the United States with this test, probably owing to the lack of familiarity with the necessary apparatus.

According to Vernes, this test is of diagnostic importance in tuberculosis, but he admits that other diseases such as early syphilis may also give high readings. The readings are obtained upon the photometer of Vernes, Bircq and Ivon according to a scale measuring millimeters of flocculation material per cubic centimeters of liquid. Healthy individuals should have a reading below 15, and a reading between 15 and 30 indicates some disease in which a mild or quiescent tuberculosis may be included. A reading above 30 is taken to indicate active progressive tuberculosis.

According to the work of Baylis and Baylis and MacNeal in this country the test cannot be regarded as diagnostically specific of tuberculosis. They find its greatest value lies in its reliability as a measure of the activity of the disease in a known tuberculous patient. Baylis, in 1928, suggested a simplified modification of the Vernes test which did away with the expensive photometer.

In this modification the amount of flocculation material is recorded as minus, one plus, 2 plus, 3 plus, and 4 plus according to a naked eye reading in small tubes. In several papers Baylis has been able to show that the Vernes test and this modification are in very close agreement, both in cases with tuberculosis and in non-tuberculous individuals. She concludes that "the methods of Vernes and Baylis are in most instances in accord and while the simplified test lacks the precision and delicacy of interpretation it may be used

with satisfactory results when and only when the apparatus of Vernes is not available."

At the Fort Stanton Sanatorium we have had occasion to use only the Baylis modification of Vernes serum flocculation test. When it was decided to try this test upon our tuberculous patients, it was thought that its value could best be gauged in a comparative study with the red blood sedimentation test. We had already found the latter of distinct value as an aid in the clinical management of these patients.

The test as modified by Baylis is a relatively simple laboratory procedure. The only criticism to be offered against it is that it depends upon the degree of precipitation in small test tubes as registered by the sense of sight. Here the element of personal equation might influence the readings. This objection, however, applies to other laboratory tests of well recognized standard, as, for example, the Kahn precipitation test for syphilis, etc. If a number of tests are run at the same time and the tests are made at frequent intervals and always read by the same individuals the errors in the readings become so small as to be insignificant.

Thus far we have run 204 tests upon 182 individuals, the serum of several having been tested twice or oftener. These are thought to be a sufficient number for a preliminary report which would enable the medical staff of the Fort Stanton Sanatorium to decide whether the test was of sufficient value to continue its use or not.

The tests as run here were set up by one person, who numbered each tube, while the readings were done by another person, who had no knowledge whose serum he was reading. The results were recorded according to the numbers, and the patients' names were afterward attached to the reports. In this way the tests were not influenced by any knowledge of the patient's condition and were fair in every respect. Particular stress was laid on this phase as we wanted to obtain the true value of this test. It would have been better, of course, for two persons to have read the tests, but there were only two trained persons in the laboratory during this period and I believe the most satisfactory plan was adopted under the circumstances.

Practically all persons who had a Baylis test had their blood sedimentation time taken within a short interval. This made it possible to compare these two laboratory procedures in the same patients during approximately the same phases of their tuberculous processes. Table I shows how these tests compare under these conditions.



TABLE I

Erythrocyte Sedimentation Tests		Vernes-Baylis Flocculation Tests				
		2		3		4
		-	plus	plus	plus	plus
		42	30	37	42	53
6 hours plus.....	38	-24-	6	4	3	1
4 to 6 hours.....	25	8	-11-	2	4	0
2 to 4 hours.....	22	5	5	5	4	3
1 to 2 hours.....	36	4	5	-14-	8	5
½ to 1 hour.....	37	0	0	5	-20-	12
0 to ½ hour.....	41	1	2	4	3	-31-
Unclassified .....	5	0	1	3	0	1

Notice: As Table I lists all persons tested it includes seven non-tuberculous individuals who are treated separately in Table II.

From this table it is apparent that of 42 negative Baylis tests, 24 or over 57 per cent are in group VI, the normal group of the blood sedimentation and 8 more were in group V where normal and quiescent cases also react; making a total of 76 per cent for these two groups. This is a point in favor of the two tests, as checking each other in a group of patients who are quiescent or have apparently arrested tuberculosis (See Table III).

In this negative group there is one patient particularly who does not seem to belong there. He has a very low sedimentation, indicating marked pulmonary activity. This patient is at present in the ambulatory section. He was classified as a moderately advanced case upon admission. While in the infirmary his pulse was frequently up to 120 per minute, indicating much activity. On the other hand, since he has been in the ambulatory section, his pulse has been below 90. A subsequent blood sedimentation test on this patient put him into group V. This would make it seem that the Baylis test was not so far wrong as it appeared at first.

The other reactions, numbering nine, are situated in groups III and IV according to the blood sedimentation. All of them had well marked pulmonary tuberculosis. They indicate that the Baylis test is occasionally negative in cases of pulmonary tuberculosis.

On the other hand, if we look into the group of 4 plus reactors we find 30 of these in group I, or practically 60 per cent, and if we add those below the one hour mark, thus including group II, which are also considered markedly active cases according to the Linzenmeier technic there is an accord between the two tests in 84 per cent. There is one patient here who also showed a markedly opposing condition according to the two tests; being not active according to the sedimentation, and markedly active with the Baylis. This patient has a chronic fibroid phthisis. According to the x-ray, he has some cavities;

and his sputum is positive. Some time back, while in the ambulatory section, he was considered clinically fit to be placed on exercise, but he did not do well and had to return to the infirmary on account of fever and apparently renewed activity. Another thing which complicated the interpretation of the test in this case is that he has syphilis. However, everything considered, in my opinion, it seems that the resorcinol test probably more closely depicts his true condition. Again it must be said for the sedimentation test that the next time it was run it had dropped to two hours. It is the cases that do not fit in which are the most interesting and this one seems to attest the value of the flocculation reaction.

Of course some of the patients in this column show more activity by this test than the blood sedimentation and the clinical status would indicate. We cannot expect to get perfect results by the Baylis test.

Now a further glance at the table shows us that in the other groups the two tests are somewhat in accord. Of course there are some marked discrepancies but these are in the minority. For example in the 1 plus column (meaning perhaps little activity), we found the majority listed in Linzenmeier group V, and the next largest numbers in groups VI and IV. But there are two cases here also in which both tests are in marked conflict. One is a patient who is at present in the infirmary with tuberculosis of the hip and tuberculosis of the larynx. Here the Baylis test, no doubt, is in error. The other patient is in the ambulatory section as a chronic fibroid case. He has even been on exercise for a time without ill effects. In this case there is room for questioning the reliability of the blood sedimentation test. At least a compromise between the two might indicate the true state of tuberculous activity in this patient.

The 3 plus group, indicating much activity, is seen to compare more or less closely to group II, with a relatively sizable number also in group III. The 2 plus shows the cases pretty well distributed but with most of them found in group III of the Linzenmeier grouping.

This table therefore gives us some idea of this test in determining the activity and progressiveness of tuberculosis. This is so if we still consider the blood sedimentation test of importance in this connection. For myself, I am still strongly partial to it.

Now there were several persons who had two or more tests and it might be profitable to review the findings in these cases. There were 18 persons who had tests run more than

once. Of these, eight gave exactly the same reading on each occasion. In five of the other cases the readings were closely approximated, i.e., belonging to adjoining groups. This gives 13 cases, or over 70 per cent, in which the test remained practically the same. On the other hand there were five instances in which there was a more or less marked difference. The reason for this is not apparent in one case. This is one of the pneumonia patients referred to in Table II. In the four other cases there seems to be a definite cause each time. One man who gave a 2 plus when his blood sedimentation was 1½ hours developed empyema and rose to 4 plus and the sedimentation dropped to 15 minutes. In another case a 4 plus and a 45 minute blood sedimentation was seen following a ruptured appendix and general tuberculous peritonitis. This patient, following an operation, made a good recovery and the Baylis test then was read as 1 plus, while his sedimentation time registered as 3½ hours. He was in the ambulatory section with a negative sputum at that time. Another patient had a 2 plus Baylis and 3¾ hours sedimentation which within six months, while he was making remarkable progress towards recovery, changed to negative and 4½ hours respectively. In another case with pleural effusion a 4 plus was revealed which became negative following the absorption of the fluid. The blood sedimentation reaction remained over six hours in this patient.

In reviewing our 204 cases from a clinical standpoint, apart from the erythrocyte stability test, it was found that a negative Baylis test was often obtained in arrested and apparently arrested and quiescent cases of pulmonary tuberculosis. A one plus reaction also was sometimes found in these classes of patients. Occasionally, however, cases with marked activity for some unknown reason gave flocculation reactions within these groups. On the other hand, for the most part, far advanced, markedly active and terminal cases gave very high flocculation tests which were recorded as 4 plus and 3 plus. Only occasionally did a patient with apparently quiescent tuberculosis give a marked Baylis reaction. Tables III, IV and V show the Baylis test of these classes of patients. They show plainly that for the most part the test gave valuable indication of the degree of activity of the tuberculous process as could be judged by a careful clinical observation.

Of the 204 tests, eight were run on non-tuberculous individuals. Table II shows the results in these:

TABLE II

Non-tuberculous persons					
Total Cases	Neg.	1 plus	2 plus	3 plus	4 plus
8*	5	2	0	1	0
*7 individuals.					

Of the five who reacted negatively, four were apparently healthy and one had a chronic arthritis. The two who gave positive results were both cases of lobar pneumonia. One of these patients had two tests. The first was 3 plus and the other one plus. The other patient had a one plus test. This seems to speak for the apparent specificity of the test and bears out the point of Baylis that false reactions occur especially in inflammatory diseases of the chest.

The test was tried on a group of ambulatory patients who were on exercise treatment to determine their status for discharge as arrested or apparently arrested cases. Table III gives the results in this class of patients.

TABLE III

Patients on exercise					
Total Cases	Negative	1 plus	2 plus	3 plus	4 plus
38	24	8	4	2	0

Here we see that there are only a few cases who show activity according to this test. Every one of these patients had a consistently negative sputum.

In this connection it is interesting to note that nine of these patients were subsequently discharged from the hospital as arrested, or apparently arrested cases. Most of them had been tested by exercise or work for a much longer period than required under the National Tuberculosis Classification. Of these, seven were negative and the other two gave one plus and two plus flocculations respectively. The one with a two plus reaction was discharged several months after the test had been run and had made marked progress in the meantime.

On the other hand, far advanced and terminal cases of pulmonary tuberculosis give quite different results with this test as can be seen by Tables IV and V.

TABLE IV

Far advanced cases of pulmonary tuberculosis					
Total Cases	Neg.	1 plus	2 plus	3 plus	4 plus
72	1	4	7	15	45

Those who subsequently died among this group showed Baylis flocculation tests according to the following table:

TABLE V

Deaths from pulmonary tuberculosis					
Total Cases	Neg.	1 plus	2 plus	3 plus	4 plus
9	0	0	0	2	7

These tables speak eloquently for themselves and for the value of this test as a measure of tuberculosis activity.

From this preliminary study with the Baylis test at the Fort Stanton Sanatorium, the



medical staff thought the following conclusions were justifiable:

(1) That while the resorcinol flocculation test does not seem to be diagnostically specific of pulmonary tuberculosis it is a valuable laboratory procedure by which to grade the pulmonary activity of our tuberculous patients.

(2) That in this connection it corroborates the results of the red blood sedimentation test in the majority of cases.

(3) That when the two tests differ, although we consider the red blood sedimentation the more reliable, the patient should be considered as still in a doubtful class as to his tuberculous activity until further data show more definitely where he belongs.

(4) That patients in whom the Baylis test is negative and the blood sedimentation within normal limits (if they are free of constitutional symptoms and their sputum is consistently negative) should be put under observation and tested out for the arrestment of their tuberculosis.

(5) That further work with this test seems feasible and that the above conclusions are tentative and subject to changes as the number of tests made so far is too small for any permanent deductions to be drawn.

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#### WHO SHOULD BE CALLED A PATHOLOGIST?

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The object of this paper is not to present something new in the way of investigation but rather to call attention to some of the errors creeping into the profession from over specialization.

The general impression of a pathologist is one who is skilled, or claims to be, in the

study of diseased tissue with the microscope, and is unfitted to do any work of a clinical nature.

The word "pathology" comes from the word "pathos," meaning to suffer and literally, would cover all conditions producing suffering. It has been classed, by good authors, as the "science of disease." This definition would include much more than we usually include in the meaning of the word. It must be quite apparent, on due consideration, that no one mind could comprehend it all and only a genius could assimilate a fair amount of the vast amount of knowledge accumulated under this subject.

It may be proper to class one who is especially interested in microscopical and chemical diagnosis as a pathologist, but unless he is doing research along these lines, he is no more entitled to this classification than any other person making diagnoses. Anyone interested in or making diagnoses is continually hunting out or running down all changes of any sort that have taken place in the body. Yet, such a person is not looked upon as a pathologist.

The therapist should understand much about the changes that have occurred in order to care for a patient intelligently and how is he to get this knowledge? Does anyone think of the therapist as one studying or knowing pathology?

Et'ology, pathology, prognosis, diagnosis and treatment are about all there is to medicine. Diagnosis commands the important place and many and elaborate methods have been developed to make it accurate, effective and efficient. Yet, diagnosis is only finding out the changes that have taken place and hence, rests on pathology as its chief foundation stone. In like manner, all the rest of the branches rest on the same support. So it would seem that all of us are more or less pathologists, for the foundation of all our knowledge rests upon pathology. In other words, we might be called applied pathologists. However, our chief aim is not to be pathologists but diagnosticians and therapists, or, in other words, find out the cause and remedy for human suffering.

The first idea conferred to many by the word "pathology" is that part of the subject called "morbid anatomy" and next the study of specimens from the operating room, but the subject is much larger than these fields and the accumulated knowledge we have of it has come from many fields. Laennec did work in both the postmortem room and the clinic and gained much knowledge for pathology but he is not classed as a pathologist. Likewise, the late Dr. Osler not only worked

in like manner but also did a goodly amount of work with the microscope, yet he was classed as a clinician. Dr. Edward Hallowell a hundred years ago, 1835, collected thirty-four cases of ruptured heart and added one of his own. The descriptions of the postmortems were excellent yet they were not made by a pathologist. Dr. Holmes, in his book "Elsie Venner," had the old family physician who was little learned in books, have his museum of specimens he had saved from postmortems and from which he gained much knowledge. Dr. Holmes also remarked that the preserving of anatomical specimens thus was the most fitting monument to the departed. Our own dear comrade, Dr. Werley, has spent lots of time on postmortem material as he has tried to add new light on some of the complicated problems connected with heart disease. Yet, none of us think of him as a pathologist. So it seems, from past and present views, one can have a good first hand knowledge of morbid anatomy, gained through the personal sense of touch, smell and vision, without being a pathologist. Every physician ought to know how to do a good postmortem, recognize all of the organs of the body and the common gross changes. The men in the clinical laboratories hardly are doing work that entitles them to be classed as pathologists for they are but aiding the clinicians in diagnosis. The roentgenologist is revealing as much pathology as any other branch of medicine and some that is revealed in no other way, still we do not think of him as a pathologist.

It is quite apparent that most of the work carried on in our clinical and x-ray laboratories, while it may reveal a lot of pathology, is for the purpose of aiding diagnosis. We are multiplying the power of the clinician's eyes so he can see more minutely, acutely and accurately and his fingers to feel more keenly and also to a better understanding of chemical changes going on. I think the term "laboratory diagnosis" would better cover the work the laboratories are doing, or, if one wishes, they can call it "laboratory medicine." The name "laboratory diagnosis," I think, would convey a better meaning to the public so they could understand better what we are trying to do. It would also bring us nearer the clinician, for we should be as much clinicians as anyone and perhaps if he should call one of us in consultation to see a patient with him, he would be calling someone as much interested as he and one who could probably give him some useful help.

But who is the pathologist or who should be called one? From the above remarks, he

is apparently not one of us. I would like to see this term reserved for one who is devoting his life to finding out new knowledge whether by pure research in the laboratory, or in the wards, and teaching this science to others.

## RECENT ADVANCES IN INTERPRETATION OF PHYSICAL SIGNS IN PULMONARY TUBERCULOSIS.

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(Published with the permission of the Medical Director of the U. S. Veterans' Bureau who assumes no responsibility for the opinions expressed or the conclusions drawn by the writer.)

The physical examination of the chest as we know it today had its beginning during the end of the eighteenth and the beginning of the nineteenth centuries. Auenbrugger's discovery of percussion was a most important milestone on the road to progress. His book on percussion was published in 1761, but the method of diagnosis described was little used until Corvisart translated Auenbrugger's work into French in 1808.

Laennec early recognized the value of percussion and used it extensively, checking up on his findings with the exact condition which the autopsy revealed. He stated that he was confident that physicians who had not used Auenbrugger's discovery had overlooked at least one-half of the pneumonias and almost all the chronic pleurisies.<sup>1</sup>

In 1819, Laennec published his treatise on mediate auscultation. Laennec not only discovered auscultation but developed it to such an extent that its theory has but little changed up to the present time. For instance, if we compare Laennec's classification of rales with that in the most recent publication of Norris and Landis, we are surprised at the similarity. Laennec, however, does not claim priority in diagnosing disease by, as he expresses it, looking beyond subjective symptoms. He states that the ancient physicians made use of touch, inspection, measurements, succussion and also immediate auscultation. Laennec, himself, states "that it is very singular that the passage in Hippocrates' Works, in which the latter states, 'that by applying his ear to the chest he could tell whether, if it contained fluid, this was pus or water', seems never to have engaged the attention of physicians, and there is no evidence that this experiment has been repeated up to the present (Laennec's) time."

Sophus Bang<sup>2</sup>, in his historical sketch on percussion, states that although percussion of the abdomen was used in the time of Hippocrates, the idea of transferring this method to the chest evidently never occurred to



anyone until Auenbrugger conceived the idea. It is interesting to note that, in spite of Auenbrugger's discovery, which we now see was most brilliant, he was made the victim of much criticism and ridicule on account of his teachings.

In the introduction of his book, Laennec states that Bayle was the first person in his knowledge who applied the ear directly to the chest at the time when they were attending the lectures of Corvisart. However, neither Bayle nor any of the other students employed this method in any other way than that of perceiving more distinctly the action of the heart in the cases where this was not very perceptible to the touch.

When we consider that Laennec not only introduced the stethoscope, but in his book described the signs of tuberculosis much the same as may be found in our modern textbooks on physical diagnosis, only then can we realize the astonishing work he accomplished. His conclusions on auscultation were based on long study on the cadaver. Whenever possible, the correctness of his clinical findings were checked up with the actual findings found at autopsy. He classified rales as

- (1) moist rales or crepitations;
- (2) mucous rales or gurgling;
- (3) dry sonorous rales or snoring;
- (4) dry sibilant rales or whistling.

The mechanism of the production of these different varieties of rales is also described and is practically the same explanation as given in Norris and Landis. He not only invented the terms but also described the mechanism of bronchial, cavernous and amphoric breathing, bronchophony, whispering pectoriloquy and metallic tinkle. It is interesting to note that Laennec considered rales of less importance than respiratory sounds and voice in supplying data for diagnosis. He also emphasized the importance of cough in the production of rales.

A survey of the literature since the time of Laennec shows that much investigation has been carried out, some on the cadaver, in an attempt to determine the significance of physical signs. In 1835, Magendie<sup>5</sup> and, in 1838, Bigelow made experiments on the cadaver to determine the cause of metallic tinkle. Skoda's<sup>6</sup> experiments in 1854 produced some results, and Skoda's resonance is well known to us all.

Barth and Rogers<sup>7</sup> in 1842, Piorry<sup>8</sup> in 1866, and Petrequin<sup>9</sup> in 1835 did some work on the cadaver experimenting on the mechanism of rales. However, but little was accomplished to add to our knowledge of physical diagno-

sis as presented by Laennec until quite recently.

During the World War, Bushnell made many contributions to various phase of tuberculosis. In circular No. 20, issued by the War Department<sup>10</sup>, he standardized the essentials in diagnosis and taught how to interpret them. The non-essentials and those methods which had led to many serious errors he discarded and told us how to avoid. He established the physical diagnosis of pulmonary tuberculosis by the proper interpretation of physical signs on a much higher plane than it had ever been before. His book, "Physical Diagnosis of Diseases of the Chest," published in 1925, is still the most up-to-date text-book on that subject.

The introduction of the roentgen ray in the diagnosis of pulmonary tuberculosis during the last twenty years has, to a certain extent, revolutionized our interpretation of physical signs. More has been accomplished in the proper interpretation of physical signs since the introduction of the roentgen ray than has been accomplished previously in a century of experimentation. We have not only learned the limitations of physical signs, but we have enhanced their value by learning better how to interpret them.

Some clinicians of the old school are still reluctant to acknowledge the value of the roentgen ray and to admit the uncertainty and limitations of physical signs. The way they still persist in the omnipotence of physical findings and discredit the roentgen ray is most surprising. An article has recently been published by an Eastern specialist<sup>11</sup> in which he claims to be able to determine the progress of his cases by what he calls "ear mental pictures." The "ear mental picture" recorded on the mind by an examination is compared with the "ear mental picture" of a previous examination, and, by the minute changes which this author claims to be able to detect, he determines the progress of his cases. He does not tell us the secret of just what the changes are, whether in rales or breath sounds, but it appears to be something indefinable, which cannot be recorded. Such views, of course, are extreme and would be ludicrous except for the fact that they are believed by many who have little or no knowledge of physical diagnosis.

The roentgen ray has aided us in various problems. Not many years ago a school of internists arose who claimed to be able to diagnose pulmonary tuberculosis by a few changes in the breath sounds, malaise and a few gastrointestinal symptoms. Our sanatoriums were soon full of such cases. The roentgen ray showed that many of these

were not incipient pulmonary tuberculosis and that the changes noted usually meant a healed lesion or an entirely different disease entity.

The roentgen ray has changed our ideas to a certain extent in regard to percussion. Impaired resonance found over the upper part of the chest has often been considered pathological and an indication of tuberculous infiltration. The roentgen ray revealed that many of these cases showed no infiltration, the lungs being perfectly clear. The conclusion, therefore, is that in most normal chests there are variations in the percussion note from base to apex, and the normal variation has often been considered pathological.

The roentgen ray has also brought to our attention the fact that physical findings can not be relied on in detecting cavitation. In fact, since the introduction of the roentgen ray, our entire viewpoint in regard to cavities has changed. It was formerly taught, and in fact we see such teaching in recent text-books, that large cavities do not heal. Our roentgen ray studies have shown us that large cavities, often two or three inches or more in diameter, heal and often very rapidly. The roentgen ray has further shown us that cavities frequently occur, all physical signs being absent. Barnard and Garrard<sup>11</sup> found that about 55 per cent of cavities were silent. In reporting on 145 cases of definite pulmonary cavitation determined by the roentgen ray, Bendove<sup>12</sup> found that 66, or 45 per cent lacked the classic physical signs of cavitation. The writer<sup>13</sup>, in a series of 245 tuberculous cases, found cavitation as demonstrated by the x-ray in 90 or 36 per cent. Of these 90 cases, only 20 per cent showed two each of the five diagnostic signs of cavitation: whispering pectoriloquy, cavernous breathing, cracked pot resonance, post-tussive suction and consonating rales.

The reason that physical signs of cavitation are found absent does not seem to depend so much upon the size of the cavity as its location. As stated by Bruns and Barnwell<sup>14</sup>, cavities situated in the mid-lung and surrounded by fairly normal pulmonary parenchyma are not easily demonstrated by physical findings but are readily shown by the roentgen ray. Bendove<sup>15</sup> believes that a plugged or fibrosed opening into a bronchus accounts for many of our silent cavities, also that many of the relatively mute cavities occur when the walls of the cavity are soft and ragged and are not vibratile.

The roentgen ray is therefore absolutely essential if we expect to diagnose cavitation in pulmonary tuberculosis. Some will say, however, that all annular shadows do not

mean cavitation, some signify pleural rings, others localized pneumothoraces. The hypothesis advanced in 1919 by Sampson, Heise and Brown<sup>16</sup>, that many annular shadows were localized pneumothoraces, is entirely discredited, at this time, and Amberson's<sup>17</sup> theory, promulgated in 1921, that many annular shadows were caused by localized pleurisies, has but few advocates. In the same article in which Amberson promulgated his theory, he thoroughly disproved that annular shadows of a certain type were localized pneumothoraces. Later, Burnham and Philip King Brown<sup>18</sup> discredited Amberson's theory of pleural rings as well as the theory of the Saranac group and pointed out conclusive methods by means of the x-ray of disproving their views and of proving the cavity interpretation. Bruns and Barnwell<sup>14</sup> state that, at Fitzsimons Hospital, during eight years when one of the writers witnessed eighty to one hundred necropsies each year, he does not remember seeing a definite roentgen ray annular shadow which could not be accounted for at the necropsy by the presence of a cavity. These authors state further, however, that the reports of those showing rings coming to autopsy in which no cavities were found must be credited as authentic but that such cases are most exceptional. Bruns and Barnwell close their discussion by stating that, if an annular shadow is present in the roentgenogram of a tuberculous lung, it should be considered as being due to a cavity unless proved otherwise. The fact that physical signs are wanting, should not alter this conclusion.

The roentgen ray has aided us in the interpretation of rales. The study of many pulmonary stereoroentgenograms showed us that rales were often extensively present when there was no pulmonary infiltration. It was also noted in studying pulmonary lesions by serial roentgenograms that, although, in many cases, there was rapid clearing of the parenchymal infiltration, the rales remained practically the same.

Further study of tuberculous lung pathology by roentgenoscopy demonstrated that, whether a lesion be pneumonic, caseous, fibrotic or healed, the same type of rales was often present. The logical conclusion was evident. Rales in pulmonary tuberculosis did not indicate activity, in fact they did not mean that manifest pulmonary tuberculosis even existed unless corroborated by other findings. Furthermore, it seemed doubtful if a certain type of rale usually considered typical of pulmonary tuberculosis was due to moisture as usually supposed. Such opinions were expressed by Bruns<sup>11</sup> at Fitzsimons, as



early as 1923. His paper<sup>19</sup> on parenchymal rales in pulmonary tuberculosis, published in *The Journal of the American Medical Association* in 1925, was most opportune, for it presented a very plausible explanation of an extremely perplexing problem. On studying the literature and noting the various contributions to physical diagnosis in pulmonary tuberculosis from the time Laennec published his great work, Bruns' contribution stands out as a most important step in advance. His experimental work on the cadaver, which was the basis of his article, extended over two years. His methods were as follows: An incision was made over the larynx of the cadaver and the larynx and upper part of the trachea were dissected free and brought through the incision. A bellows was then inserted into the larynx and the lungs made to expand and collapse. During this artificial respiration, the chest was auscultated and rales recorded. The larynx, trachea and lungs were then removed from the cadaver and again made to expand and collapse by means of the bellows. Again, the lungs were examined for rales and carefully recorded lobe by lobe. Then, in order to determine the origin of the rales, incisions were made to determine the exact origin of the rales and the condition of the lung present, as to moisture, pneumonia, congestion, fibrosis, tubercle, et cetera, and the cut surface observed to see whether fluid bubbled from the cut ends of the bronchioles during artificial respiration. The bronchi and their branches were then opened and the lumen of the bronchial tubes examined for secretion, inflammation and ulceration.

So far, Bruns has elicited and studied six types of rales appearing in pulmonary tuberculosis:

(1) A coarse, gurgling rale heard over cavities. This rale is heard on expiration as well as inspiration and is manifestly due to moisture.

(2) A coarse, bubbling rale heard over the trachea and large bronchi which is also heard during inspiration and expiration and is also due to moisture.

(3) A medium sized rale heard throughout inspiration and also during expiration. This type of rale is very changeable, does not require an expiratory cough to elicit it and is, no doubt, due to moisture in the smaller bronchi. An incision over the area in which rales were heard always elicited bubbles of fluid from the cut ends of the bronchi. Such rales may be designated bronchial rales.

(4) Sonorous and sibilant rales, found to be caused by tenacious moisture in the larger bronchi.

(5) Fine crackling and crepitant rales heard synchronously with the inflation of the subpleural lobules.

(6) Lastly, a medium or sometimes rather fine rale often heard over normal areas of the lung and elicited when the lungs are in a condition of collapse and then made to expand. These occur in showers during inspiration and are not heard during expiration. They are not due to secretions in the bronchi or bronchioles, as the cut surface of the lung over which these were produced was dry and did not show any serum during inflation.

It is this last type of rale which has been variously interpreted, the usual interpretation being that it was due to secretions or moisture in the smaller bronchioles.

It is interesting to note that this type of rale comprises more than 90 per cent of the rales heard in pulmonary tuberculosis and is considered the rale most diagnostic of that disease.

Bruns' conclusions from his investigations are that these rales, called by him parenchymal rales, by Bushnell<sup>20</sup> typical indeterminate rales, by some medium rales and by others wrongly, crepitant or subcrepitant rales, are not due to abnormal secretions in the bronchi but are due to the expansion of partially collapsed alveoli or lobules, the collapse being caused by infiltrating tubercles in a neighboring lobule, by contraction of fibrous bands, by pleural adhesions, and so forth.

These conclusions are not only supported by painstaking investigations but are most logical when we consider that the rales in question may be present whether the lesion be acute or arrested, whether the patient has fever or no fever, whether he has cough and expectoration or no cough and no expectoration or whether the roentgen ray shows definite infiltration or no infiltration.

Again, these rales differ from the rales we know are due to moisture in several very important points:

(1) They usually require an expiratory cough to elicit them.

(2) They occur only on inspiration and the same phase of inspiration.

(3) They are of the same size.

(4) They are not changeable as to character and location.

(5) Their character is crackling.

(6) They may persist over the same areas indefinitely.

On the other hand,

(1) Moist rales do not require an expiratory cough to elicit them.

(2) They may occur on expiration as well as inspiration.

(3) They vary in size.

(4) They are very changeable, especially as to location.

(5) Their character is moist.

(6) They often and usually do clear up rapidly.

The weight of evidence, therefore, seems to nullify the old opinion that the rales in question are due to excessive moisture, but are more of the nature of atelectatic rales. Although these rales can no longer be considered a sign of activity or even of pulmonary tuberculosis, they are always suggestive of pulmonary tuberculosis and should still be considered our most important sign of that disease, their real value depending on their interpretation, which is dependent upon other physical signs, the constitutional symptoms and, above all, the roentgen ray.

#### CONCLUSIONS

1. From the time of Laennec, there has been but little advance in the interpretation of physical signs until quite recently, and roentgen ray studies have been greatly responsible for the advancement made.

2. Moderate apical dullness and moderate changes in breath sounds are no longer considered signs of beginning pulmonary tuberculosis and should usually be ignored.

3. Too many refinements in percussion and auscultation often lead to errors. The claims made by some diagnosticians of special ability and dexterity in physical diagnosis should be frowned upon.

4. Physical signs are no longer considered adequate in diagnosing cavitation. More than 50 per cent of cavities are of the silent variety and require the roentgen ray to make a definite diagnosis.

5. In diagnosing chest conditions, it is very important to distinguish between parenchymal and other types of rales. Parenchymal rales are found in approximately 90 per cent of all tuberculous cases. Other rales found in pulmonary tuberculosis usually indicate complications, as bronchitis, bronchiectasis, pulmonary edema, et cetera.

6. Parenchymal rales should never be considered a sign of activity or even of manifest pulmonary tuberculosis unless corroborated by other findings.

7. Increase of these rales over certain areas does not mean an extension of the lesion unless corroborated by constitutional symptoms or roentgenography. Fibrosis or healing has the same mechanism in the production of these rales as increased infiltration.

8. These rales, however, should still be considered the most important sign of pulmonary tuberculosis, their value depending on their proper interpretation, which requires

a careful study of the accompanying physical signs, constitutional symptoms and carefully prepared roentgenograms.

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#### CASE REPORT OF SCARLET FEVER.

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(Presented at the Staff Meeting of the City-County Hospital, El Paso, in March, 1930).

#### CASE REPORT

(Dr. Barrett)

E. L. McE., age 4, American, male. Became ill four days ago, (Feb. 9, 1930), with sore throat, and three days ago rash appeared over body. When I saw him the first time, he had a rash which was beginning to fade. His throat was red and sore, but it looked like it was clearing; temperature in the neighborhood of 102-103. He ran along practically ten days, apparently improving, when his throat became sore again, much more sore, in fact,



and examination showed it to be gangrenous. At the same time his ears began to drain. There had been no previous evidence of otitis media, the ears having been checked every few days, but now they began to drain very profusely, temperature running between 103-104. On Saturday I saw him in the afternoon and he was apparently in reasonably good condition. On Sunday morning, Dr. Blanchard, who was on my service at the time, noticed he was becoming quite anemic and called me in the afternoon stating the child was extremely anemic. Dr. Black went with me then and we gave him a transfusion; the next day he had a second transfusion. He reacted readily to each and his condition seemed to be improving; in fact after the first one, it seemed to me that he had been turned away from the grave. Then, about ten days after the beginning of the otitis media and his gangrenous sore throat, (Dr. Britton having been asked to give attention to his ears during that time), after a consultation between Drs. Black, Britton and myself, we decided to operate, since no other cause for the temperature range could be found, and as this was now ranging in the neighborhood of 104-105, Dr. Britton did a double mastoid operation on Friday, about which he will tell you. The patient seemed to improve for a day or two following the operation, until he again became quite anemic and was again transfused. Each time he received about 300 to 350 c.c. of citrated blood, first from his father, then from his mother, and in all he has had five transfusions of this amount. His condition now is really quite serious, I think, though he seems to show some degree of improvement. The red blood cells run above 3,300,000; his white count has come down from a very high point to 11,000 and a predominance of lymphocytes (44 per cent) and about as many polymorphonuclears. Examination of his chest and general examination this morning showed nothing in particular, and apparently there is nothing but his ear condition and his anemia and toxemia. He developed about the 15th of this month, a suppurated gland on the right side of his neck, which was opened and drained. It had been coming on for about a week and had been aspirated on several occasions. On the 15th, it was decided to drain it.

I should like to have Dr. Black discuss the case, and also Dr. Britton, who has been following the mastoid conditions daily.

#### DISCUSSION BY DR. BLACK

I do not have much to say about this child. He has had an extremely interesting course for a case of scarlet fever, and I think perhaps one of the most interesting features was the development of a purpura, which was really the occasion for the first transfusion. Within a period of twelve hours, he became profoundly anemic. It was too rapid to come from any cause except hemorrhage. He passed great clots of blood from the bowel, also bled rather freely from the throat and also from the lips, which were cracked. He had true purpura, I think, for he had purpuric spots over his skin; for instance just at the base of his nose there was a line of purpuric spots. His mother noticed each time she put a glass of water to his mouth that the upper lip of the glass struck him on the forehead and there followed a small subcutaneous extravasation of blood. A direct transfusion in such a case would be desirable perhaps, though practically the indirect method, with sodium citrate, would seem to be quite as effective. From the time the first transfusion was given, he had no more purpuric manifestations, but did pass a few clots from the bowel. These were passed within eight or ten hours; but at no time since has he developed any signs of purpura.

Such a complication, I think, must be extremely rare. I looked it up as best I could. Kerr, in his experience in ten or twelve thousand cases in England, makes the remark that hemorrhagic purpuric complications have been described, but he personally had never observed one, so it must be a rare condition.

The bouts of anemia he has had since then have not been so rapid, but have been marked. Just what the explanation is I do not know, unless one explains it on the basis of toxemia, which is not a very satisfactory explanation; but clinical observation and blood examination shows he has had remissions and then progressive anemia again.

Another feature of interest is the fact that this child had no evidence of acute mastoiditis. If one had relied on the ordinary symptoms of mastoiditis, probably the mastoids would never have been opened. They were opened more or less on a hunch, or intuition. We knew he had a severe, overwhelming infection, that he had little resistance, and we knew from experience that of all infections of the middle ear, the streptococcal infection is the most dangerous and the most insidious. There can be a great deal of necrosis and damage done long before there are any outward manifestations.

The next problem is whether he should be transfused again and whether repeated transfusions, regardless of his general condition would boost him enough to prevent a recurrence of anemia and perhaps help him to overcome the infection which is still present.

#### DISCUSSION BY DR. B. H. BRITTON

I was called in to see this case by Dr. Barrett. At the time I saw him, the external auditory canals were necrotic and bulging. This was the most fulminating inflammation, I believe, I have ever seen in my experience. The cutaneous tissue of the external canal was completely detached and you could not get a look at the drum membrane or middle ear. The discharge was similar to one per cent mercuriochrome or a bloody fluid with a very offensive odor. We made a slide which showed short chain streptococci. There was only slight tenderness over the mastoid areas. I rather hesitated to operate on account of his high temperature and poor condition, and it was only with reluctance that we proceeded and did a rapid operation, the only purpose of which was to establish drainage between the antrum and outside. On the left side we found the antrum was filled with a mass of cell debris and necrotic bone. I did not try to remove any other cells and left the wound wide open. On the right side, as soon as we reached the antrum, we noticed a big abscess cavity. The odor was very offensive on both sides denoting bone destruction. It did not take us long to do the operation.

The next day he appeared much better and brighter, with a temperature of 104, pulse 130 and the following day also, but on the fourth day he became very stupid, which I thought a bad sign at that time. I feared perhaps he was getting an abscess, thrombosis, or some other complication, since while it was rather early for one to develop, this stupor was a new symptom. However, the following day he was again alert. His ears as well as the postauricular opening have continued to drain, not profusely, but scantily, the discharge having a very offensive odor. The cells below the antrum have obliterated themselves of their own necrosis. It is evident he had a terrific infection of the mastoid. The skin was edematous and red about the mastoid incision following operation and approximately one-fourth to one-half inch thick. Before the operation his temperature was between 104 and 105, pretty constantly, while at the present time, it is running between 97 and 106. You can see it is a true septic pyemic type of temperature. I have irrigated his

ears with Dakin's solution; keeping the connection between the middle ear and antrum open. There is no question about drainage; the wound is wide open and draining freely. In spite of this free drainage, he runs this high temperature.

Due to the absence of other physical finding and due to the absence of any signs of a sinus thrombosis, cerebral abscess or phlebitis, it is my opinion that this child must have a blood-stream infection. However, there may be some mastoid complication, the symptoms of which are not pronounced enough for diagnosis at this time.

The fact that he has developed deep abscesses in the neck, lumbar muscles and also in the thigh, which I believe to be metastatic abscesses, leads me to the opinion that the child has a pyemia. Whether this was due to the mastoid infection or whether the mastoid was due to hematogenous infection, from his scarlatina is a matter of conjecture. However, as he was running this high septic type of temperature, was running this high septic type of temperature, with a pronounced anemia before the operation and which has persisted following the operation, I believe the mastoiditis to be of hematogenous origin.

### LIGNEOUS PHLEGMON OF RECLUS REPORT OF A CASE\*

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\*Presented at Staff Meeting, Good Samaritan Hospital.

This condition is also known as Dupuytren's Phlegmon, Woody Phlegmon and Holz' Phlegmon (in Germany). It is a slow and indolent inflammatory process involving the antero-lateral structure of one side of the neck and resulting in a dense woodlike hardness.

The disease usually results from an acute infective process in the mouth, throat or mastoid. While the exciting cause is infection, with or without trauma, impaired health is believed by some to be a predisposing cause, but this has not been my experience with any of the ten cases that I have treated. Many different pyogenic organisms have been found but none seem to be specific, the most frequently found being a small gram negative coccus, morphologically like the staphylococcus, which produces no effect in animal inoculation. The disease is no doubt due to an attenuated infection capable of promoting and keeping up a prolonged inflammation. There is an anatomic reaction occurring in the cellular tissue resulting in exudation and fibrous tissue formation.

The submaxillary lymph nodes are usually first affected. They become indurated but do not show marked enlargement. The periglandular tissue is next involved, the inflammatory process spreading to the connective tissue, fascia, muscles and skin. The skin is thick, wine-red and firmly attached to the deeper structure. There is some pitting on firm pressure. The whole involved area is swollen, indurated and woody in consistency.

The boundaries of the induration are quite sharply defined from the non-infected tissue. There is but little pain, tenderness or fever in most of the cases. The head and neck are held rigid. There is little tendency to suppuration early in the disease, but if an incision is made into the affected area, purulent exudate may be found. Later in the disease small suppurating areas may form. In some cases minute encapsulated pus pockets occur.

The course of the disease is essentially chronic and may remain stationary for long periods. The duration varies from a few months to two years or more. While the tendency is toward ultimate recovery it is always dangerous and fatalities may occur. It can compress the larynx and trachea, interfering seriously with breathing. Worthington reports the case of a man who strangled to death seven months after he first noticed the swelling of the neck. One of Reclus' cases died of edema of the glottis. In some cases there is serious difficulty in swallowing.

The age of reported cases varies very much, the youngest being eight years old. It appears to be more frequent after middle life and to be most frequent in men.

Although most frequently observed in the neck, woody phlegmon may occur in other parts of the body. It has occurred in the abdominal wall after appendectomies and herniotomies and after trauma from a fall. In these cases it may not be noticed for many months after the operation or trauma. Ashurst reports a very similar affection in the axilla. Greco reports a case involving the perirenal tissue and a case has been reported involving the gluteal region. Its occurrence in the neck is of more serious nature than in other localities.

Unless one is acquainted with the disease, the diagnosis may be difficult. The wine-red color and the sense of resistance of the skin, the fixation of the skin to the underlying structure, the pitting on firm pressure, the firm woody feeling with the borders of induration sharply defined and with but little discomfort, pain or fever and the chronicity should make the picture clearer. Lymphosarcoma resembles it most closely but can be eliminated by the rapidity of the growth, the tendency of the disease to involve one gland after the other, causing them to enlarge and fuse together and its tendency to cross the midline and implicate glands on the opposite side. There is often an early ulceration of the skin over the tumor. In case of question, a biopsy of one of the glands will clear up the diagnosis. Actinomyces usually arises by direct extension from the primary foci



in the jaw or teeth; it can be recognized by the appearance of a slowly increasing painless swelling in the submental and submaxillary regions which, at first, is quite indurated but soon softens and the abscess breaks, leaving a sinus lined with flabby granulation tissue containing characteristic yellow granules; the diagnosis can always be made certain if the ray fungus can be demonstrated. Secondary carcinoma of the cervical glands offers less difficulty in differential diagnosis, as the involved glands are extremely hard, the skin is movable over them and they are easily movable upon the underlying and surrounding structure, the induration and the areas involved do not have the sharply defined borders; in carcinoma we can usually find the primary lesion.

Active treatment is not usually followed by satisfactory results. It is best to treat the disease palliatively as spontaneous cures usually occur. Hot moist applications give some relief and may prove beneficial. The use of infrared rays offers hopes of beneficial results. Incision should not be made into the diseased area until definite softening has occurred. If there is softening and pus formation, a free incision should be made into the suppurating areas.

#### CASE REPORT

No. 7407 F. K., white woman, housewife, age 58, was admitted to the hospital December 12, 1929. Family history negative. Complaints of swelling and pain in the right side of neck, extending down to chest. Intermittent pains starting on top of head shooting down over right ear. Present illness began three weeks ago with symptoms of a sore throat. Patient had been feeling very well and awoke in the morning with a sore throat. A few days later there was a swelling under the angle of the jaw which has spread over the entire right side of the neck.

Patient had all the usual childhood diseases; smallpox 28 years ago; operation for tumor of left ovary 25 years ago. Seventeen years ago had a similar attack to the one she is now having. States that condition was not quite so severe although it lasted almost four months and seemed to involve the bronchial tubes extending into the chest. Swelling was not quite so severe and the pain and temperature rise not so great. General health is very good. Well nourished. Had passed the menopause. Married 42 years. Four children. Deliveries normal. Some lacerations which were repaired.

A general physical examination was made and the findings were normal except both tonsils were hypertrophic and hyperemic. The right tonsil shows a sinus from which a small amount of pus is exuding. There is redness of the skin over the right antero-lateral surface of the neck, extending from the mastoid to below the clavicle and the skin is fixed to the underlying tissue, all of which forms a dense woody like hardness. This hardness involves all of the structure and is firmly fixed. There is but little tenderness or pain and no signs of fluctuation. The temperature was 100.2 F. Pulse 104. Since she has been in the hospital her temperature has been up to 102.4 and pulse 110. The urine was normal. The blood examination showed hemoglobin 80; leukocytes 12,300; polynuclears 70; small mononuclears

22; transitional 8. Under treatment the redness of the skin and the induration has diminished from above downward to about the center of the area. The lower half has continued red and indurated and an area of fluctuation has occurred near the center of the lower half. This was allowed to open spontaneously. December 22, a culture gave a growth of streptococci only.

When patient first came into hospital, ice bags were applied but this failed to give relief. This was followed by applications of continuous moist heat except twice a day infrared light was applied, first one-half hour each application, later increasing to one and a half hours twice a day. This treatment has apparently given very satisfactory results. The patient claimed that the area is much more comfortable for several hours after the infrared light has been used. Since the formation and liberation of pus, the same treatment has been continued and as you can see inflammatory process is diminishing rapidly. Patient was discharged from the hospital Dec. 31, completely cured. I believe that the illness was shortened by the infrared light treatment.

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#### DISCUSSION

DR. JOHN J. McLOONE: Dupytren's phlegmon has its etiological factors in affections of the teeth tonsils, the mastoid or the salivary parotid gland. The infection is probably an attenuated one and not wholly able to break down the tissue. Hence we have a generalized induration without much free pus. The bacteria are spread quickly through a large area of tissue, as can readily happen in the loose tissue of the neck, and there results nowhere sufficient concentration to produce the effects seen in abscess. The tissue has not degenerated and the exudate is so spread out that no liquefaction takes place. This diffuse inflammation is called a phlegmon. Frequently there is produced a dense and hard skin area. They are also called woody or ligneous inflammations. The treatment is palliative rather than surgical, especially in the early stages. Should localization of the abscess take place, free opening would be indicated. However, previous to localiza-

tion of the abscess, heat in the form of infrared light I believe is the best therapy. This can be combined with hot magnesium sulphate compresses or one-half of one per cent carbolic acid solution.

When a cellulitis results from a mastoiditis, naturally attention to the mastoid would be indicated. In Bezold's mastoiditis there is a perforation of the tip or the mesial portion of the mastoid which results in a deep suppurative process. In other forms of diffuse cellulitis too early surgery, that is surgery before we are sure of the presence of a suppurative process, is contraindicated. The safest plan to adopt, provided the vital structures are not in danger, is to use the measures above enumerated to help the localization of the abscess. This will facilitate the later surgery that is done for the removal and evacuation of the purulent process. Meanwhile, possible etiological foci producing the infection should be investigated.

## ACUTE GONORRHEA

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(Read before the Maricopa County Medical Society, at Phoenix, Ariz.)

### HISTORY

The Israelites were sufferers from gonorrhea, as the disease is referred to in Leviticus.

Ebers, the famous Egyptologist, says the ancient Egyptians were familiar with the disease prior to the history of the Israelites. Aretaeus, a Greek physician, born in Cappadocia in the first century A.D., gives the first detailed history of the disease. Aretaeus describes the discharge continuing day and night, the depressing effect upon the sufferer, and regarded the discharge as unfruitful semen, an opinion later held by Galen, born in 130 A. D.

The word, gonorrhea means flow of semen and comes from the Greek.

Galen is credited with the term gonorrhea but it is more probable that Hippocrates invented the word as Cleopatra used it and probably suffered therefrom as she says "Aliquando etiam spermatis spontanei et importuni fluxu foeminae fatigantur quod et proaciae gonorrhoeam appellant." Cleopatra was dead before Galen was born.

There is evidence that Hippocrates was cognizant of the disease both in men and women in the fifth century before Christ.

Aetius, a Greek, born in Mesopotamia, A. D. 500, describes ulcers of the urethra as resulting from gonorrhea and strongly advised against use of injections. Nothing was written for the next 600 years except from the two Arabian physicians Avicenna and Albucasis who added nothing to the knowledge which had emanated from their Greek masters and forerunners.

We pick up the trail again in the thirteenth century from the writings of Bernard Gordon and in the fourteenth century from

Valescus Von Taranta. Both of these authors pointed out the social evil of the disease, the latter saying "Gonorreum, non solum infect damum individuo, ino et toti speciei humana generis. Quod si homines omnes paterantur gonorreum, sic cito humanum genus desperiret." Benedetti, a century later said "Veluti enim pestilentia plurimos affixit."

The next historical period is one of confusion between gonorrhea and syphilis, which certainly lends color to the view that syphilis had not invaded Europe prior to the fifteenth century.

Paracelsus, the well known German Swiss pseudo-physician and alchemist, regarded gonorrhea as the initial symptom of syphilis, an error which his followers continued.

It is not clear who first recognized that gonorrhea was not a discharge of semen, but the first to attempt the change of name was Turguet de Mayerne Il Voppoia, to a flow of pus.

Gonorrhea as an inflammation of the urethra and lacunae was discovered by Terraneo in 1709 as a result of six post-mortem examinations. These observations were confirmed by Cockburn in 1715 and Morgagnini in 1719. Although Cockburn and others described the genital complications of gonorrhea and pointed out that the lesions did not disappear with mercury as did those of syphilis, clearly showing that many held the two diseases distinct, the unity view again came into prominence through Hunter's unfortunate experience in 1767.

Benjamin Bell in 1793, James Tongue in 1801 and Jean Hernandez in 1812, all inoculated themselves with gonorrheal pus and developed gonorrhea only, but Hunter's reputation was such that not until Ricord in 1838, as a result of several experiments proved that gonorrhea was a distinct disease and the dualists to be correct.

The history of the treatment consists mainly of the antiphlogistic theory which was practiced for all diseases alike, introduction of a louse into the patient's urethra, hot water baths, application of living or crushed bugs to the penis. The favorite injection was woman's milk. Balsams were introduced by Franz de la Bue Sylvius, a German, in 1674 and in this country by Sydenham in 1680.

According to Renaud, the first preventive measure recommended was micturition immediately after coitus, a teaching coming from the school of Salerno. In the thirteenth century William of Salicet advised washing out with water after suspicious intercourse and his pupil Lanfranc used ablu-



tions with equal parts of water and vinegar, to which the patient's urine was sometimes added. John of Gaddesden is credited with the invention of the suspensory bandage and this was used by Guy de Chauliac who practiced at Lyons and Avignon.

Neisser in 1879 discovered the gonococcus organism.

#### INOCULATION PERIOD

Varies from one day to six weeks, usually three to four days after exposure. This variance is due to resistance of individual, virulence of infection, area of infection, use of preventive measures. Some cases, as the Irishman says, run a chronic course from the start.

#### PATHOLOGY

Gonococci are first implanted upon the urethral mucous membrane, multiply extracellularly and produce no pus. Then in a few days polymorphonuclear leukocytes make their way into the lumen from the blood vessels in the subepithelial tissue and ingestion of gonococci and formation of pus takes place. Then the gonococci make their way between the epithelial cells into the tissues beneath. The gonococci probably reach their height of development in two weeks and from then on diminish due to antibodies circulating in the blood stream, chemical substances from the epithelial cells and to growth of other organisms. In acute gonorrhea the chief difference is the diffuse spreading over practically the entire surface of the urethral mucous membrane. The male urethra divides into the pendulous, bulbous, membranous and prostatic portions. Acute gonorrhea may be limited to the first two portions but in the majority of cases we will probably find an infection in the posterior urethra too.

#### SYMPTOMS

Undue attention to the penis. Feeling of warmth in the urethra. Grayish-white discharge after urination at first, followed in a day or two by a thick creamy yellow or greenish secretion. A bead over the orifice in the morning. Burning painful urination. Painful erections at night.

#### DIAGNOSIS

1. History of the case.
2. The various glass tests of the urine, the most common being the two glass test.
3. Bacteriologic examination of the pus and finding the gram negative intracellular diplococci.
4. Culture may be of some value.
5. Complement fixation test.

#### TREATMENT

From the various modes, drugs, instru-

ments, etc., used today each genito-urinary specialist, as well as the rest who treat gonorrhea, has his own particular choice of treatment or hobby as it may be. This phase of the subject could be a veritable battle ground of dissension. With just a few comments I will present briefly our outline of treatment which I think is coming to be the accepted line of treatment in most genito-urinary clinics.

I think it safe to say that most cases of gonorrhea are over treated rather than under treated, at least at the beginning. This may seem impossible to a few who hand out two prescriptions, one for argyrol injection and the other sandalwood oil or urotropin, just on the patient's word that he has gonorrhea and not even casting a glance at the offending organ.

Again, as in most every disease the patient has to be individualized for a rational treatment. They vary from the cocksure type who minimizes his trouble and thinks nothing of it, to the harassed, nervous individual worried to death because of his infection, or the neurotic who has pain regardless of the treatment used. On the other hand infection may be more virulent and complications of the surrounding tissues determine nature and extent of treatment.

1. Acquaint the patient with the extent, nature and possibilities of his infection.

2. Give printed, detailed instruction sheet to patient.

3. Medication.

(a) Oral—Agents to change reaction of urine.

Bromides.

Belladonna.

Codeine.

(b) Urethral Injections.

Silver salts.

Dye compounds.

Miscellaneous; Utzman's solution.

(c) Vaccines.

(d) Physiotherapy; — hot applications, hot sitz baths, rest.

4. Instrumentation;—this is only mentioned so that it may be condemned.

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## DIAGNOSTIC FORUM

### VERTICAL HEADACHE

(Case No. 15191, Case Records of Massachusetts General Hospital, New Eng. J. of Med., May 9, 1929, p. 994).

#### Case History.

**First admission.** An Irish-American electrician forty-nine years old entered the hospital September 4 complaining of morning headache, chiefly on top of the head.

For three years he had had tinnitus in the right ear. This had been no worse since the onset of the present illness. For the two months he had had loss of memory for recent events and had talked more slowly than usual. Seven weeks before admission he had a cold in the head, with much discharge from the nose every morning. This had persisted. His eyes ran a good deal. Since the onset of these symptoms there had been much more retardation of speech. Five weeks before admission he began to have a severe vertical headache every morning, usually disappearing after breakfast and recurring toward evening. For three weeks he had had daily morning nausea followed by vomiting, not projectile, and had a cough with thick white sputum and hoarseness. He rarely had night sweats. For two weeks he had had blurring of vision and vertigo. At times he felt as if he would fall.

His father died at thirty-five of phthisis. One daughter died at five with a questionable diagnosis of weakness of the heart.

His eyes had always troubled him, aching at times. He had worn glasses since he was twenty-one. He had had no diplopia. The left nostril was smaller than the right. He had gonorrhea with treatment before he was married. He had typhoid fever fifteen years before admission. He had tonsillitis ten years before admission. Four months before admission he had four teeth extracted.

Clinical examination showed a well nourished man with skin lesions on which a diagnosis of psoriasis was made. The heart, lungs and abdomen showed no abnormalities. With the arms extended there was slight tremor of the hands, more on the left. Knee-jerks and ankle-jerks very lively but equal bilateral Babinski was found at the entrance examination, but was not found by the visiting neurologist a week later.

Neurological examination. Face pulled to the right on showing teeth. No tremor of the tongue. Grips equal. Vibratory sense in the right leg diminished from the knee down, in the left leg diminished in the ankle. Reflexes normal except for Babinski.

Urine normal except for a slight trace of sugar. Blood: 16,600 to 15,425 leukocytes, polymorphonuclears 78 per cent, hemoglobin 80 per cent.

Chart normal.

Consultation. Oculist: a few floating vitreous opacities. The right disc showed hyperemia, near obliteration of physiological cup with one-half to one diopter of elevation. The left eye showed hyperemia with blurring of the nasal margin. Extra-ocular movements normal. At a second examination two days later the same findings were reported. There was also fine jerking rotary nystagmus on looking up and to each side. Visual acuity was normal. A third examination a week later showed no change. Ear consultant: No deafness. Both drums were retracted and the ossicles were not too freely movable in the right side. This probably accounted for the tinnitus. A caloric test with cold water showed no abnormalities of the horizontal canals, but the nystagmus, vertigo and past-pointing from the ver-

tical canals of both ears, although in the right direction, was very poor.

X-ray of the skull showed no abnormalities of the skull or sinuses. The roots of four teeth showed abscesses. These teeth were extracted by a dentist and two more were reported as dead.

September 9 the patient felt as though he wanted to vomit although he was not really nauseated. He became dizzy, weak, semiconscious and would have fallen to the left if he had not been caught.

September 14 a lumbar puncture between the fourth and fifth lumbar vertebrae gave clear fluid, initial pressure normal, good rise and fall on jugular compression, 1 cell, alcohol positive, ammonium sulphate and Wassermann negative, total protein 97 milligrams, colloidal gold 1111211000.

While the patient was in the hospital the nausea and vomiting stopped and the headache became less frequent and severe. September 21 he was discharged, to return at the end of a month for check up.

**History of interval.** After going home the patient had a return of the attacks, though they were less severe. On October 9 he was semi-comatose. The following day he could remember seeing two physicians and several ministers, but could not remember any events connected with them.

**Second admission,** October 10, three weeks after his discharge.

General physical examination was as before. Neurological examination the day after admission showed definite bilateral plantar flexion. There was very little evidence of lack of coordination in the finger-to-finger and finger-to-nose tests. Nystagmus was very slight if present at all. There was no ataxia. There was questionable slight left fifth motor and left seventh weakness. Tinnitus was present on the right.

Before operation the chart was normal.

October 13 operation was done. After it the temperature was irregular, with periods of elevation to 100° or 101°, once to 102.2°, lasting one to three days, with intervals of days or weeks of normal or occasionally subnormal temperature. The pulse was 56 to 130; usually below 90 until November 18. The respirations were not remarkable until December 13, when there was a terminal rise in the whole chart—temperature 100° to 105.2°, pulse 108 to 150 respirations 22 to 50.

X-ray examination October 16 showed a peculiar mottled appearance of the bones of the skull. The calvarium was rather heavy. A review of the previous plates showed similar but less marked changes. The sella turcica appeared normal. There was calcification in the region of the pineal gland. There was no evidence of increased intracranial pressure.

October 21 there was mild staphylococcus infection of the wound, causing edema so marked as to shut the right eye. Four days later the entire extent of the incision was infected. There was evidence of pressure. October 27 herniation of the brain tissue was suspected and October 31 was definitely present. The infection slowly cleared. A consulting oculist found early choking of each disc. The physiologic cups were still present. November 6 a lumbar puncture showed an initial pressure of 450, total protein 65. Forty cubic centimeters of clear fluid was withdrawn. After the procedure the swelling was definitely diminished and the skin edges were partially drawn together with adhesive. Lumbar punctures were done also on October 19, 20 and 27. The patient lost ground steadily, became much more stuporous with Cheyne-Stokes respiration at times. An attempt to tape the skin edges over the wound caused blockage of pus drainage and spread, so that the wound was left wide open. The brain fungus was moderately riddled with small abscess-



es. By December 11 the infection had practically cleared and epithelialization was almost complete. The wound was not particularly tense. The fundi seemed quite flat, with evident secondary optic atrophy. The patient was periodically drowsy and alert. December 16 the leukocyte count was 72,800, the polymorphonuclears 93 per cent. There were signs of possible beginning pneumonia. December 17 these were increasing. That night the patient died.

The following discussions of this case were given before the Yavapai County Medical Society and the Medical Officers of Fort Whipple, at their regular meeting of Jan. 7, 1930:

**DR. I. D. LOEWY**

This patient presents a history of illness extending over a period of about five and a half months, two months prior to admission to hospital and three and a half months in hospital until he died. During this period he had first, slight loss of memory for two months, speech slow; a little later a cold in the head and profuse discharge from the nose; eyes ran; also increased retardation of speech. Five weeks before admission he had vertical headache every morning, which cleared up during the day. Three weeks before admission he had vomiting without nausea and not projectile; also cough with thick white sputum. He rarely had night sweats. It is rather a jumbled history, but all the symptoms are referable to the head or skull and perhaps to the brain.

The examination covers two periods; one on first admission which did not reveal very much; his face was pulled slightly to the right when he showed his teeth, and reflexes normal except for a slight trace of sugar; white count 16,000 to 15,000, polys 78 per cent, hemoglobin 80 per cent; right eye showed hyperemia, obliteration of physiological cup, the left eye showed hyperemia with blurring of the nasal margin, some nystagmus present. On first examination teeth were x-rayed and showed four abscesses, which teeth were removed by a dentist. He would become weak and dizzy and fall to the left if not caught. The spinal fluid appears to be normal. Evidently they did not make a definite diagnosis, but the signs and symptoms refer to the brain or within the skull at least. There is nothing definite as to identity of the lesion or its location at this time. Before he left the hospital he improved somewhat, the spinal puncture probably helping to reduce the pressure.

In the meantime, all the symptoms returned with increased severity and after three weeks he was readmitted to the hospital, comatose. At that time neurological examination was made and showed definite bilateral plantar flexion, questionable fifth and seventh motor weakness. X-ray of the skull showed mottled appearance. On October 13th he was operated; we believe they opened the skull and went in to the brain, that they were looking for brain tumor. From the date of operation until December 17th, when he died, this man presents a picture of infection, first low grade infection apparently controlled for a while, and later on harder to control; herniation of the brain tissue; choked disc and increased spinal pressure. What went on in this man's head?

We have to remember that in diseases of the brain and meninges we have brain abscess, thrombosis, metastatic abscess, brain tumors,—malignant and benign, of which gliomas make up about fifty per cent,—pituitary tumors, meningiomas, auditory neuroma, tuberculomas and gummata. There is nothing to indicate gummata,—the history is entirely

negative and spinal Wassermann is negative. Tuberculomas are more frequent in children and usually follow some other tuberculous process in the body. There is nothing in this case to warrant, for instance, a diagnosis of pulmonary tuberculosis, although he did have a cough and sputum; the chest is negative except near the end of the case, when he has rales, no doubt a terminal pneumonia. His father died of phthisis which must be taken into consideration. There is no sputum examination recorded and no mention of anything to point definitely to a tuberculous focus in the body, especially in the lungs. So we rule out tuberculoma.

Pituitary tumors are characterized by slow growth, by pressure symptoms and by finding of enlargement by x-ray, and general signs and symptoms characteristic of tumors or growths of the pituitary gland. There is nothing in this case to indicate it.

Auditory neuroma can not absolutely be ruled out but there is nothing in this case to warrant a diagnosis of that particular type of tumor.

Metastatic tumors and abscess would be secondary to conditions elsewhere in the body and there is nothing to indicate disease in other parts of the body. There is no septicemia present to point to metastatic abscess.

The two most probable conditions are brain tumor and the ordinary type of brain abscess. It is sometimes impossible to differentiate, prior to operation, between brain abscess and brain tumor. There are some features, however, of brain tumor that are absent in brain abscess and vice versa. The classical symptoms of brain tumor are projectile vomiting, choked disc and intense headache. This man does not have early choked disc but had an eye condition that eventually led up to choked disc prior to death; did not have projectile vomiting, although he did have peculiar gastro-intestinal symptoms,—vomited, was nauseated and did not vomit,—a continual history of vomiting prior to admission and up to time of operation. He had headache but not intense, no progressive headache which nothing remedies, in which it is obvious he is suffering from severe pressure.

To have brain abscess there must be some focus of infection, about the head presumably. A form of brain abscess not so often mentioned is that connected with lung abscess or bronchiectasis. This patient has cough, tenacious sputum and the history mentions that he "did not often have night sweats," which implies he did have them but not often. Of course the history taker was looking for tuberculosis. Foci of infection most common in the head, which might produce brain abscess, are otitis media and sinusitis. This man had abscessed teeth; profuse nasal discharge; tinnitus, ringing in right ear, evidently due to otosclerosis. We do not think otitis media is in this picture.

**DR. B. L. JONES**

This case offers some difficulty in differentiating between abscess and tumor of the brain, but we have some symptoms in regard to brain abscess that are very strong, and some in regard to brain tumor that are not very strong in favor of that diagnosis. A brain abscess is always secondary. We have in this case evidence of infection in the teeth, of the sphenoidal sinuses, as primary cause of abscess.

The spinal fluid is negative except that it is under pressure, which might indicate brain abscess. We find in brain abscess that there may be normal or subnormal temperature. There may be a moderate leukocytosis, which is present in this case.

The eye symptoms are not definite, pointing to either abscess or tumor or new growth. We know

that optic atrophy or choked disc may be present without abscess.

One of the most common causes of brain abscess is suppurative otitis media. In a series of seventy autopsies of brain abscess, forty-two were attributed to the ear. One important point in brain abscess is that it generally follows chronic inflammation rather than acute. In this case we know that he was observed for a sufficient length of time in which an abscess could have formed and become walled off. It takes about six weeks to wall off a brain abscess.

In localizing an abscess of course we have the right temporal, left temporal and the cerebral areas. If it happens on the right side there would probably be no symptoms and we do have symptoms. If it happens on the left we have the sensory symptoms, may be disturbed reading and optic changes, or some paraphasia. In this case the neurologist found impairment of the seventh and fifth nerves, muscles of the face pulled to the right, so we take it this trouble was on the left. We do not think this brain abscess was spread over a very large area as there did not seem to be any extensive paralysis. All the symptoms seem to be of a very minor character, not definitely marked except after he was operated upon.

We believe that this man did have an abscess and that this was caused through infection from the nose or the teeth. We do not know what area was involved, but there are symptoms of vertigo, dizziness and staggering, nausea and vomiting. We think they operated on this man for brain abscess. It is said if you try to drain through more than two centimeters of brain tissue you will have trouble; in this case hernia of the brain developed. Evidently increased pressure formed following operation. We know that infection took place,—considerable pus formed about the operative wound. But the peculiar thing about this is that the wound healed but the man still had some of his symptoms,—loss of memory with eye changes. Then finally something happened and he died. We believe at that time he developed a pneumonia. Whether he had a septicemia we do not know. No doubt he did have meningitis up to the last. We believe that if they had not operated he would probably have lived several months longer.

Our diagnosis is brain abscess and terminal pneumonia.

The following discussions were given before the Clinical Club of Phoenix, at their noon meeting on Dec. 16, 1929:

#### DR. VICTOR RANDOLPH

Headache may be due to organic disease of the brain or vessels, to disease of the meninges or skull or the special sense organs, the eye, ear, nose and accessory sinuses. It may be of toxic origin, endogenous or exogenous. Or it may be of functional origin, in which class we find the abnormal blood pressures, mental states, eye-strain and so on.

In this case tinnitus is the second symptom given. We conclude the patient had noises of some sort in his right ear, probably due to causes within the ear. Next, he had aphasia and retardation of speech which means something cerebral. The eyes ran a good deal, there was much persistent nasal discharge, blurring vision, vertigo; also a cough, thick white sputum and hoarseness, rarely night sweats, morning nausea and vomiting. This is a great variety of symptoms, which are not adequately followed up in the history. But they point, chiefly, to the central nervous system as the site of the principal lesion.

Examination shows questionable lesion of the sev-

enth cranial nerve and of the motor division of the fifth; bilateral Babinski; there is some choking of the right optic disc and blurring of the nasal portion of the left. Five days after admission patient feels nausea and dizziness and "would have fallen to the left if not caught." The evidence points to disease in the region of the right cerebral hemisphere, particularly involving the posterior inferior portion of the frontal lobe where, in the anterior central gyrus, the motor area of the face is located. In the neighborhood also is Broca's area or the higher kinesthetic center of speech memory. We may perhaps assume that the slight changes found point to this latter area, although the speech centers are usually active only on the left side in right-handed individuals.

What is the type of lesion? Syphilis we have no evidence of. We have symptoms but no other evidence of infection in the nose or accessory sinuses. We have no evidence of infection in the ocular tracts. If abscess is present in the frontal lobe, what is the source of the infection causing it? We have no evidence. As symptoms of abscess, the patient has had some night sweats, although fever was not found in the hospital. He has leucocytosis. He has not the typical bradycardia and bradypnea of either tumor or abscess. Headache is common to both tumor and abscess. He had one or the other in my opinion. I am inclined to think abscess, because I think tumors in this location are relatively rare, and because of the type of changes in the eye grounds. I suggest that tumor sufficient in size to produce pressure changes causing choking in the right eye would also cause it in the left, whereas abscess by setting up a local inflammatory process might cause choking in the one eye without transmitting it entirely to the other.

Diagnosis: Abscess right frontal lobe. Pneumonia.

#### DR. T. T. CLOHESSY

On carefully examining this record one symptom and one sign, when connected together, suggest a very probable tentative diagnosis of frontal sinusitis. The symptoms I refer to is vertical headache, especially one recurring regularly every morning for the past five weeks, and disappearing after breakfast. This disappearance of this severe headache follows the appearance of the sign of which I spoke; that is a profuse discharge from the nose every morning. The appearance of this headache every morning is probably caused by an accumulation of secretion over night; its disappearance is supposedly caused by an evacuation of the sinus contents through the nose. We will now see what we find confirmatory of the above diagnosis, later discussing briefly other possible or probable causes of this man's illness.

The tinnitus complained of had no connection with his main trouble. Loss of memory could be attributed to toxemia, or to collateral congestion and edema, such as is noted in swelling of the face; also noted by ophthalmoscopic examination in hyperemia in the eyes. Its short duration, two months, also is consistent with this acute condition of sinusitis. Seven weeks before, his trouble was initiated by the so-called cold in the head, which might have been primarily an infection of the nasal passages, followed by sinusitis, or it might have been secondary to an original infection of the sinus. His eyes ran a good deal, as expected from reflex irritation or collateral congestion, or both. Retardation of speech could be explained by collateral congestion, as the speech centers are, I believe, not far away from the seat of his trouble; this retardation began only two months ago with the advent of his sinusitis or cold, and progressed with the progression of his present-



ing symptoms. His past history has no significance. His mental inaptitude and retardation of speech suggest paresis, but it is too acute and there is no corroboration. Neurological examination showed nothing distinctive of any other condition, and nothing incompatible with frontal sinusitis. A polynuclear count of 16,000 points to such organisms as cause sinusitis. The eye findings are such as we might find in sinusitis and are not distinctive of any other condition. Mottled skull by x-ray I think might be an extending phlebitis, such as we find on the skin in conditions of livedo.

We will now briefly touch on other possible causes. The severity of headache is probably greatest in organic diseases of the brain or periosteum, such as cerebral tumor, meningitis, syphilitic periostitis and gumma. I believe these are all we need to consider in this case. Cerebral tumor should give us some focal signs, but we have no characteristic ones. The ear-marks of a true meningitis are lacking, although I believe there is some congestion and edema of the adjacent meninges. Gumma would probably present similar signs to those found in cerebral tumor, unless other positive signs of syphilis are present. Syphilitic periostitis and meningitis have at least nothing definite pointing their way as confirmation; for instance, negative spinal fluid findings. In this connection. I would like to quote from Cabot's *Differential Diagnosis* 4th edition, Vol. 1, page 47. I wish you gentlemen would pay particular attention to this quotation. for this is from our honored mentor, Richard C. Cabot, not from a mere syphilologist, not even from Stokes, nor Fournier, nor Jonathan Hutchinson. Cabot says, "The absence of any knowledge of infection by syphilis is of no importance. Only positive evidence is of value in relation to syphilis and it cannot be too positively stated that in any person, young or old, rich or poor, whatever his character or circumstances, syphilis is always a possible diagnosis. The opportunities for the non-venereal acquisition of syphilis are very many." He also states elsewhere. "I have three times seen recovery after antisiphilitic treatment in cases given up to die of brain tumor."

Diagnosis:—Frontal sinusitis. Operation followed by infection and death from terminal pneumonia.

Diagnoses by other club members were as follows: Brain tumor, by Drs. O. H. Brown, Howell Randolph, A. C. Kingsley, W. W. Watkins. Brain abscess, by Drs. F. J. Milloy, S. I. Bloomhardt. Cerebellar abscess by Dr. R. J. Stroud.

The following are the discussions at the Clinico-Pathological Conference at the Massachusetts General Hospital (N.E.J. of M., May 9, 1929, p. 995).

#### RICHARD C. CABOT, M.D.

That past history does not help us. The present illness also is not distinctive, but makes me think of chronic nephritis more than of any other disease because of the headache and blurred vision. The catarrhal symptoms are presumably due to something else occurring as a complication.

As far as I know people do not die of psoriasis, so I think we can put that to one side.

What diagnosis did they make at the end of the first admission? Some things suggest cerebral tumor. Some things suggest arteriosclerosis of the cerebral vessels, which so far as I know could give him all the nystagmus and ear changes that he had. I should suppose one of those two diagnoses was

made, probably the first. May we have the diagnosis that was made when he went out of the hospital the first time?

Miss Painter: It was toxic papilledema; brain tumor suspected.

Dr. Cabot: I take it the operation was done with a diagnosis of brain tumor.

Operation: Under ether anesthesia the usual type of right subtemporal decompression was done. The dura and brain were under considerable increase of pressure. The convolutions were flattened and pulsation was diminished. No local evidence of tumor by inspection or palpation was discovered. Punch specimens which were taken were negative in gross appearance.

There is no pathologic report.

Further Discussion: So we have confirmation of intracranial pressure such as a tumor would give, and more, probably, than a vascular lesion would give. I should say we are still where we were before. It is probably brain tumor, site unknown.

Dr. Holmes, will you demonstrate the x-ray films to us?

Dr. George W. Holmes: There is a very fine mottling in the bones which is not characteristic of any particular lesion. In this note it says there is no evidence of increased intracranial pressure; but of course we know that he did have it, at least there was evidence of it in x-ray seen later. It must have been going on for some time before we saw evidence of it at x-ray. Negative evidence is of no value. Positive evidence may be. The note speaks of some irregularity and increased density back of the sella turcica. That is not characteristic enough for me to draw any conclusion. It may be an abnormal finding. Some of these brain tumors show calcification in the tumors themselves. But we have nothing here to justify us in making a definite diagnosis. That mottled appearance of the skull may be just atrophy. I do not know why he should have it. One of the things that should be considered is metastatic malignancy. We have no other evidence of it. It is unusual to have it metastasize to the skull and nowhere else. My interpretation would have to be some unexplained phenomenon that has nothing to do with the present illness.

Differential Diagnosis. Dr. Cabot: I do not know what else to say except cerebral tumor, possibly with pneumonia at the end.

We always ought to consider brain abscess when we consider brain tumor. They give very much the same symptoms. But the fact that he went so long without temperature is somewhat against abscess.

A Student: He had a leukocytosis in the beginning. Wouldn't that go well with brain abscess?

Dr. Cabot: That is a good point. I should have thought of that. I cannot remember leukocytosis with brain tumor. It may occur, but I do not remember it.

A Student: Could that fine mottling of the skull be due to osteomyelitis?

Dr. Holmes: Yes, that would be quite possible. Osteomyelitis might look like that. But this is too general. Osteomyelitis is usually localized, not scattered through the skull.

Dr. Cabot: I think I am influenced more or less by the fact that during the operation they made no attempt to find brain abscess. Perhaps they ought to have attempted it. But I am rather prejudiced in favor of their reasoning as we do. So far as that description of the operation goes it looks as if they are looking for a tumor. There was no probing or no trocar used as they do in many cases of brain abscess. I cannot answer this question about the high leukocyte count. It certainly sounds like something more than tumor. Of course at the end we could

have a leukocytosis from infection. There is plenty of evidence of infection there, but the initial high leukocyte count I cannot explain.

I should say that as far as we have gone the evidence is in favor of tumor except the blood, which is against it on the basis of any knowledge that I have. But on the whole it seems to me more like tumor than it does like abscess.

A Student: Is primary carcinoma of the lung ruled out here? It seems to me that he had several lesions inside the brain. Perhaps that is due to cancer of the lung metastasizing in the brain.

Dr. Cabot: Carcinoma of the lung. We have not a bit of positive evidence of that. If we can have carcinoma of the lung without evidence, then this could be metastatic to the brain. I do not see how we can go beyond speculation on that.

A Student: It is long standing in the skull

Dr. Cabot: Yes. On the whole I am a bit against carcinoma, but not on very good evidence.

As a general thing will brain abscess show by x-ray?

Dr. Holmes: No.

Dr. Cabot: Or tumor either?

Dr. Holmes: Tumor will show in a certain percentage of cases.

Clinical Diagnosis (from hospital record): Brain tumor, suspected with left hemiplegia.

Dr. Richard C. Cabot's diagnosis: Brain tumor. Terminal pneumonia.

#### DR. TRACY B. MALLORY

Anatomic Diagnoses: 1. *Primary disease.* Metastatic papillary adenocarcinoma (probably primary in kidney) in brain, lung, liver, adrenal, kidney.

2. *Secondary or terminal lesions.*

Septic infarction of the lung.

Empyema.

Operation wound—right subtemporal decompression.

Herniation of the brain.

Trephine.

This man had several tumors in his brain, but they were papillary adenocarcinomas. Tumors were also found in the skull, in the lungs, in the bronchial gland, in the adrenals, and in one kidney. The lesion in the kidney was almost the smallest of all of these. On the other hand, the kidney is the only one of all these regions where a papillary type of growth is at all common. I believe that the kidney tumor, which was not more than half a centimeter in diameter, was the primary growth from which all these metastases occurred. The terminal event proved to be not a pneumonia but a septic infarct of the left lower lobe which perforated through the pleura and caused a beginning empyema.

A Student: Where were the metastases in the brain? Were they at the base of the skull?

Dr. Mallory: A firm round area two centimeters in diameter was felt on external examination in the parietal region in the right cerebral hemisphere. There was a separate nodule in the posterior part of the left frontal lobe, a small one 4 millimeters in diameter on the surface of the left temporal lobe and a tumor in the right uncinate gyrus.

A Student: Were tumors found in both adrenal glands?

Dr. Mallory: In one.

Dr. Holmes: Were the metastases in the skull of the type that would produce such an x-ray picture? Could the fine mottling seen in the films be due to very fine generalized metastases?

Dr. Mallory: The tumors noted in gross were all rather large ones which projected somewhat inside and had lifted the periosteum from the inner table, and we found no diffuse infiltration microscopically.

## BREATHLESSNESS

(Case 15251, Case Records of the Massachusetts General Hospital, from New Eng. Jour. of Med., June 20, 1929, p. 1300).

### CASE HISTORY

First admission. An English pipe organ tuner forty-four years old entered February 19 complaining of breathlessness.

Six months before admission he went on one of the periodic alcoholic debauches in which he had always indulged. After three days his feet swelled. When he stopped drinking the swelling disappeared, returning later, increasing and ascending until it involved the penis. Since the onset he had had sharp pain over the splenic area when he was tired. Five months before admission he had a "cold" lasting four to six weeks, he thought without fever. He coughed and raised a little sputum, and had pain in the back and breathlessness, worse on exertion. For three months he had had oliguria. Three months ago he began to feel a pressure in his abdomen as though he had eaten a heavy meal, with belching and nausea. His abdomen gradually increased in size so that he had to loosen his clothing more and more. He tried eating only one meal a day without relief. Five weeks before admission he had an x-ray examination and was advised to enter a hospital. A week later by advice of a physician he followed a regime of restricted fluids, powders and unlimited diet, but after a week stopped it because he was alarmed by his oliguria. Three weeks before admission he followed advice for rest and Epsom salts with some relief of the edema and slow improvement in his feeling. Recently he had slept on his back and had had dull aching pains under his scapula, relieved by sitting in a chair. Since the onset he had gradually lost strength and gained weight, 17 pounds up to a month ago, though his arms seemed thinner. He had had three moderate nosebleeds. His bowels had become slightly constipated.

His father died of cancer of the throat. The patient's wife was psychotic for a year ending six months ago. The patient took care of her himself. His business and his income of course suffered. He had scarlet fever at twelve, typhoid fever at twenty-one. He had always been a heavy periodic drinker. At twenty-four he had lesions on his soles and a severe sore throat, and was treated with mercury by mouth. Two years later his wife had him committed to the Psychopathic Hospital for excessive drinking. He had a positive Wassermann, and treated with intravenous injections for a year and a half. At thirty-four he had gonorrhea, with treatment. At forty he had severe coarse tremor and was "jumpy" from alcohol. Now he was more quiet.

Clinical examination showed a slightly wasted man with an enormous abdomen, lying flat in no discomfort and with no dyspnea. Two submaxillary glands were felt, and left axillary glands the size of a pea. Teeth carious. Marked pyorrhea. Smooth, somewhat pedunculated enlargement of the left tonsil. Lungs clear. Apex impulse of the heart in the fourth space. Left border of dullness 9½ centimeters from midsternum, one centimeter outside the midclavicular line, right border two centimeters, supracardiac dullness 6. Sounds of poor quality. A systolic murmur at the base. Pulses normal. Radials and brachials palpable and tortuous. Blood pressure 105/70 to 112/75. Abdomen distended; fluid wave, shifting dullness. A small umbilical hernia. Edema of legs, sacrum and genitals. Pupils and reflexes normal.

Urine 120 to 34 ounces, specific gravity 1.010 to 1.030, 3 to occasional leukocytes at all of four examinations.

(Continued on page 240)



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## NEW MEXICO ANNUAL MEETING AT RATON

June 4, 5 and 6.

The Forty-Eighth Annual Meeting of the New Mexico Medical Society will again be held in historic and scenic northern New Mexico. Raton was selected as the meeting place for 1930. Dr. C. B. Elliott, secretary of the Colfax County Medical Society, has created a very excellent program, as well as a very auspicious setting for the meeting.

Raton, surrounded on three sides by lofty mountains, is glimpsed as the traveler over

ing No. 385 at Capulin. Highway No. 85, "America's oldest road," enters the city over Raton Pass from Trinidad. Highway No. 485 leads to the Southwest toward Taos and Santa Fe. It is known as "The Highway of the Immortals." Raton has a population of 7500 and lies at an altitude of 6666 feet. It has fine paved streets, many attractive public buildings; pure spring water; churches; fine schools; two golf courses; a country club; a radio station; two fine hotels and many smaller ones; restaurants, rooming houses and tourist camps. The Santa Fe Indian de-



Fig. 1. Hotel Swastika, the headquarters for the meeting.

Raton Pass winds around the mountain peaks and prepares to make the last descent into the pretty little city which lies in the valley below. The streets lie spread out in uniformly neat squares, a little city of homes with a magnificent background of mountain scenery. Raton is entered by three national highways: Highway No. 385 leading in from the south and extensively traveled by residents of Texas seeking a respite from summer heat. Pawnee Bill route, Highway No. 64, leads into the city from Oklahoma, join-

ing No. 385 at Capulin. Highway No. 85, "America's oldest road," enters the city over Raton Pass from Trinidad. Highway No. 485 leads to the Southwest toward Taos and Santa Fe. It is known as "The Highway of the Immortals." Raton has a population of 7500 and lies at an altitude of 6666 feet. It has fine paved streets, many attractive public buildings; pure spring water; churches; fine schools; two golf courses; a country club; a radio station; two fine hotels and many smaller ones; restaurants, rooming houses and tourist camps. The Santa Fe Indian de-



Fig. 2. Lake Maloya in Sugarite Canyon, from which the municipal water supply of Raton is procured.



Fig. 3. Palisades in Cimarron Canyon, rising in majestic height above a clear, limpid mountain stream flowing through the valley of the Cimarron.

from the southern line of one state into the northern boundaries of the other brings no visible signs of change either in beauty or thrift.

The program, elsewhere printed in this issue, speaks for itself and will, no doubt, draw a large attendance. It will be noted that the entertainment schedule includes an automobile trip through Cimarron Canyon, with luncheon at Eagle Nest Lake. This is a beautiful trip, and should not be missed by anyone who can make it. No more delightful vacation could be imagined than one spent in Northern New Mexico, including the scenic wonders in the vicinity of Raton. The editor has been there on two occasions and knows whereof he speaks. The illustrations presented herewith can give but a faint conception of the scenic grandeur of the "Cimarron Country."



Fig. 4. One of the trout streams in Cimarron Canyon. Real trout fishing from such streams as this has made the Cimarron country famous.



The New Mexico Medical Society  
Forty Eighth Annual Meeting

RATON, NEW MEXICO, JUNE 4, 5 and 6  
Headquarters—Hotel Swastika



Fig. 5. Capulin National Monument, near Raton.  
This extinct volcano is said to be the most perfect  
crater on the American continent.

ANNOUNCEMENTS

Registration headquarters will be in the Hotel Swastika. Every member, visitor and guest is asked to register promptly on arrival.

Scientific and business sessions will be held in the ballroom of the Hotel Swastika on Wednesday and in the El Raton Theatre Thursday and Friday.

The opening discussions are limited to five minutes and general discussions to three minutes each. No one shall speak more than twice on the same subject.

Papers read before the scientific sessions shall become the property of the Society and shall be deposited with the secretary of the Society for publication in the official organ of the Society (Southwestern Medicine).

A registration fee of Three Dollars (\$3.00) will be charged all members of the New Mexico Medical Society.

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## PROGRAM

## Hotel Swastika

WEDNESDAY, 10:00 A. M.

## Invocation:

HOMER F. COOKE - - - - - Raton

## Address of Welcome:

A. R. STREICHER, Mayor of Raton - - Raton

## Response:

DR. F. F. DOEPP - - - - - Carlsbad

## President-Elect's Address:

DR. R. O. BROWN - - - - - Santa Fe

DR. M. K. WYLDER - - - - - Albuquerque  
"Preventive Medicine as Applied to Pediatrics."DR. O. H. BROWN - - - - - Phoenix, Arizona  
"Food Sensitizations and Their Treatment."DR. FRANK N. ALLAN, Mayo Clinic, Rochester, Minn.  
"The Treatment of Diabetes."DR. STUART PRITCHARD and DR. J. K. M. GORDON,  
Battle Creek Sanatorium, Battle Creek, Mich.  
"The Significance of Blood Spitting."DR. R. J. GROOM - - - - - Santa Rita  
"Vincent's Infection."

## El Raton Theatre

THURSDAY, 10:00 A. M.

DR. C. B. FRANCISCO - - - - - Kansas City, Mo.  
"The Management of Industrial Injuries."DR. J. W. HANNETT - - - - - Albuquerque  
"The Treatment of Injuries to the Cranial  
Contents."DR. JOHN B. HARTWELL - - - - - Colorado Springs, Colo.  
"Diagnosis and Treatment of Fractures of the  
Transverse Processes of Lumbar Vertebrae."DR. M. L. BISHOFF, Atchison, Topeka and Santa Fe  
Hospital, Topeka, Kansas.  
"Treatment in Shock."DR. P. G. CORNISH, JR. - - - - - Albuquerque  
"Intrapleural Pneumolysis."DR. JAMES F. PERCY - - - - - Los Angeles, Calif.  
"The Cautey Treatment of Carcinoma Above the  
"Clavicle."  
(Illustrated by Stereopticon and Motion  
Pictures).DR. A. E. HERTZLER - - - - - Halstead, Kans.  
"Diagnosis of Osteomyelitis."

## MOTION PICTURE:

"Surgical Treatment of Peptic Ulcers."

DR. F. E. DIEMER - - - - - Denver, Colo.  
"Postoperative Atelectosis and Pneumonia."

## El Raton Theatre

FRIDAY, 10:00 A. M.

DR. F. M. HELLER, Pueblo Medical Group, Pueblo,  
Colo."Physiological and Clinical Aspects of Kidney  
Disease."DR. W. F. MARTIN, Battle Creek Sanatorium, Battle  
Creek, Minch."Urological Problems of Interest to the General  
Practitioner."DR. D. G. TOLLEFSON and DR. E. C. MOORE,  
Los Angeles, Calif."Hystereotomy, A Technic." (An Analysis of 604  
Cases).DRS. W. L. and C. P. BROWN - - - - - El Paso, Texas  
"Potpourri" Practical points in:

- a. Exophthalmic Goitre.
- b. Treatment of Serious Post-Operative Ab-  
dominal Conditions.
- c. Osteo-Arthritis.
- d. Compression Fractures of the Vertebrae.  
(With lantern slides)

DR. J. W. CATHCART and DR. C. H. MASON, El Paso  
"X-ray Diagnosis of Bone Tumors."  
(With lantern slides)DR. W. T. H. BAKER, Pueblo Clinic, Pueblo, Colo.  
"Tumors of the Female Breast."

## MOTION PICTURE:

"The Relation of Absorbable Sutures to Wound  
Healing."

## Social Entertainments

## Wednesday Afternoon—

A Tea for Visiting Ladies.

## Wednesday Night—

Line Party for Visiting Ladies at El Raton  
Theatre.Informal Smoker for Men at Ballroom of the  
Hotel Swastika.

## Thursday Morning—

Automobile Trip Thru Cimarron Canyon and  
Luncheon at Eagle Nest Lake for Ladies.

## Thursday Night—

Banquet for Visiting Doctors and Ladies at  
Hotel Swastika.

## Friday Morning—

Bridge for Visiting Ladies at Hotel Swastika.  
Golf Courses will be open to all Visiting Doc-  
tors.



## BREATHLESSNESS

(Continued from page 235)

inations; urine otherwise negative until after medication (see below). Blood: leukocytes normal, hemoglobin 75 to 85 per cent, reds 3,790,000 to 4,760,000, slight poikilocytosis, smear otherwise normal. Two Hintons and two Wassermanns weakly positive. Nonprotein nitrogen 29. Icteric index 5. Two Rosenthal liver function tests: 15 to 20 per cent retention. Van den Bergh test biphasic, 1.28 milligrams per 10 c.c. Abdominal tap February 20; 4½ liters of clear yellow fluid, specific gravity 1.005, 150 red cells, 60 leukocytes, mostly monocytes. Stools not remarkable.

Temperature 96° to 99°, with one rise to 100° March 2. Pulse 65 to 97. Respirations normal.

X-ray examination with a barium meal and a barium enema showed no definite evidence of organic disease. Palpation of the stomach was impossible because of abdominal distention. There was some spasm in the region of the sigmoid.

A syphilis consultant thought the left lobe of the liver seemed enlarged. After the abdominal tap the liver edge was felt, smooth, not tender, 8 to 9 centimeters below the costal margin; the left lobe was easily felt and was larger than the right. Salyrgan, mercury succinamide and ammonium chloride were given, but were stopped because of the appearance of albumin and casts in the urine. A lumbar puncture was negative. The dorsalis pedis arteries were obstructed; there was poor circulation in the feet. March 6 the patient was discharged.

**History of Interval:** The patient did fairly well for the next month. He came to the Out-Patient Department for four treatments of mercury succinamide, and had several abdominal taps. March 31, after taking morphine prescribed by his physician he became somewhat irrational. During the next two days he sank deeper and deeper into coma. He vomited coffee grounds material several times.

**Second Admission, April 2.**

Examination showed a comatose, moribund man with deep and slowed respirations and cyanotic cheeks and lips. His eyes were turned to the left; apparently he could not move them to the right. Systolic blood pressure 80. Pulse somewhat rapid but regular. Coarse rales posteriorly. Abdomen moderately distended with fluid. Veins over the lower chest and abdomen dilated and plainly visible. No edema of the legs or genitalia. Leg reflexes very hyperactive, equal. Clonus well sustained on the left, poorly sustained on the right. Questionable Oppenheim and Babinski, both legs. Arm reflexes hyperactive but equal.

Temperature 98°. Pulse 90 to 140. Respirations normal.

The patient died quietly the evening of admission.

The following discussions of this case were given by the Clinical Club of Phoenix, at their meeting of December 9, 1929:

### DR. J. M. GREER

Male, age 44, pipe organ tuner. There is nothing significant in his vocation, unless it might be that organ tuners have a difficult time to remain on the wagon. His habits of alcoholic debauchery were very significant to me not only because of the effect of the alcohol on the mind but its effect upon the morals and conduct of the individual. This history makes one immediately think of both alcoholism and syphilis. However, one must not jump at conclusions without thorough investigation as it is quite easy to be wrong.

With this history and breathlessness as a major

symptom one would then think of the circulatory system, or both the lungs and heart, the renal system, and, if there were ascites, the hepatic system. The bilateral swelling of the feet, ascending, suggests disturbance in the circulatory system rather than the kidney. Just why the swelling would disappear when he stopped drinking, is not clear to me; it may have meant a return toward normal circulatory tone or it may have been incidental. The later return of the swelling and with gradual ascent involving the penis points toward circulatory failure, although it could be mechanical and this must be differentiated if possible. The sharp pains over the splenic area are probably due to splenic congestion. The cold lasting four to six weeks is probably unimportant but indicated decreased resistance. The cough and sputum and pain in the back worse on exertion were probably due to circulatory congestion or a low grade bronchitis. The feeling of pressure in the abdomen was no doubt due to the swelling, edema and ascites.

What the x-ray examination was we can only speculate as they do not reveal that to us.

The treatment of restricted fluids, powders and unlimited diet as well as the improvement with rest and Epsom salts suggests edema and ascites of some other than renal origin. The oliguria was probably largely mechanical. The gain of weight was probably more apparent than real and due to a collection of fluid in the tissues. The history of nose bleed is interesting and in consideration with the blood pressure points toward a disease of the vessels rather than a hypertension. This may have little to do with it however, as we often see most any kind of a patient have a nose bleed.

There is no help in the family history. The marital history is of little value unless perhaps to have increased his habits of periodicity spoken of before. His past history is significant both as to the use of alcohol and luetic infection. When he was committed to the Psychopathic Hospital it may have been because of alcoholism or even lues of central nervous system.

In the physical examination the fact that he could lie flat with no discomfort or dyspnea would not suggest pulmonary or lung involvement, nor would it really suggest heart disease as a basis as in both of these conditions patients usually breathe better sitting up. Later on we are told that the lungs are clear.

It does not seem to me that the glandular enlargement of the submaxillary and left axilla is significant.

The high position of the apex impulse was no doubt due to pressure from below. The extent of the left and right border as well as supracardiac dullness suggests an enlarged heart but of moderate degree; it suggests one that has been displaced, by something outside the heart itself. The palpable tortuous brachials further suggest cardiovascular disturbance and considering the blood pressure the atheromatous vessels are more apt to have a syphilitic background as an etiological factor.

The urine being practically normal carries us away from a nephritis and strengthens our impressions of cardiovascular pathology. There is little of value to me in the blood picture. The weakly positive Hintons and Wassermann are about what one would expect in a luetic that has had treatment, and to me does not in any way rule out syphilis as a primary background for the pathology. Nonprotein nitrogen of 29 is within normal limits. The icteric index of 5 I believe is also within normal limits. The Rosenthal liver function of 15 to 20 per cent retention is probably somewhat significant as I believe that there should be no retention at all in a normally

# Typhoid Fever Is Preventable

Immunization of millions of soldiers against typhoid during the World War proved that the use of typhoid vaccine is a safe, simple, and effective measure. Its use should be extended to protect those who may be exposed to infected water, milk, or food.

## Typhoid Mixed Vaccine LILLY

SPECIFY THROUGH YOUR DRUGGIST

V 760 Three 1 cc. vials for complete immunization  
of one patient.

*Larger packages are available for group immunization.*



FOR PAMPHLET CONTAINING INFORMATION OF IMMUNIZATION AGAINST TYPHOID FEVER WRITE

**Eli Lilly and Company, Indianapolis, U·S·A**



functioning liver. The Van den Berg test of bilirubin in the blood I am unable to read; if it is 1.28 to 10 c.c. it would seem quite high; maybe it is meant that amount to 100 c.c. as I thought the reading was usually made on a basis of 100 c.c. I wish some of you would enlighten me upon this subject. The ascitic fluid is that of a transudate. The temperature curve does not help us except to rule out any acute inflammatory process. The x-ray examination with barium meal helps to rule out organic disease of the digestive tract. The abnormal findings in the liver point toward a syphilitic rather than an alcoholic liver. The enlargement of the left lobe suggests a possible gummatous formation and the general enlargement with enlargement of the spleen may mean a luetic hepatitis and be responsible for some of the ascites.

The final coma, abnormal reflexes and demise suggest involvement of the central nervous system. Possibly not of the actual brain tissue itself but at any rate of the blood vessels supplying the brain.

Diagnosis: 1. Cardio vascular disease of syphilitic origin. 2. Luetic hepatitis with possible gumma in the left lobe. 3. Luetic endarteritis especially of the cerebral vessels.

### DR. HOWELL RANDOLPH

The gradually developing persistent edema calls attention first to possible cardiorenal disease. No albumin or casts are present in the urine except after irritation with diuretic drugs. There is history of oliguria, but while patient was in the hospital the urine varied from one to four quarts daily which is not abnormal. N. P. N. normal. There are signs of arteriosclerosis and of an aortic lesion in which even without a positive blood Wassermann in a patient of these habits is probably a syphilitic aortitis. Dyspnea has been a prominent symptom but there is no orthopnea and the patient is not dyspneic when lying quietly in bed. There are no signs of moisture above the diaphragm.

Excessive alcoholism, and syphilis treated for a year and a half by arsenicals, enlarged liver, and very marked ascites indicate that pathology of the liver is responsible for the major portion of the symptoms. There is no jaundice and the liver function tests do not indicate any abnormality. Tiontestsd tion tests do not indicate any increase in the bilirubin in the blood. A biphasic Van den Berg is equivocal. The icterus index is normal. The Rosenthal dye test shows some reduction in the ability of the liver to remove phenoltetrachlor-pthalein from the blood. This coincides with clinical evidence of liver changes.

Syphilis of the liver may result in ascites as reported by McCrae and Caven in 42 out of 100 cases. Enlargement of the liver is usually present. Antisyphilitic treatment is the best single method of differentiating from cirrhosis and neoplasm. In this case there seemed to be no beneficial results, although potassium iodide was not given. With evidence of cardiorenal disease other forms of antisyphilitic treatment are more dangerous.

Among the etiologic factors in Laennec cirrhosis are alcohol, syphilis and tuberculosis. Of those with positive Wassermann nearly half are greatly benefited by antisyphilitic treatment. We may have the third factor also in this patient. Symptoms of cough and slight expectoration with pains in the chest ten weeks before death might be undiscovered tuberculosis although this is unlikely without more fever. Epistaxis is common in portal cirrhosis.

Delirium and coma frequently develop in the terminal stages.

Diagnosis:

Portal cirrhosis of liver with hypertrophic changes.

Syphilitic aortitis and myocarditis.

Arteriosclerosis with moderate changes in kidneys.

Splenic enlargement associated with portal cirrhosis.

Cerebral hemorrhage, right middle meningeal artery.

(Note:—All members of the club agreed on diagnosis of cirrhosis of the liver, with varying opinions as to whether it is syphilitic or alcoholic.)

### DR. W. C. MELOY

The case we are to discuss presents many problems. Our patient had been a rather degenerate character from the beginning,—syphilis at twenty-four and gonorrhea ten years later; a periodic drinker throughout his life.

Six months before admission to hospital, after three days of heavy drinking he developed edema of the feet and ankles. This subsided when he stopped drinking, we are not told exactly how soon. It started again and progressed until the genitals were involved. From the beginning there has been pain in the upper left quadrant. About a month later he developed a slight productive cough; became short of breath, edema remained about the same. We are wondering at this time if acute alcoholic poisoning could not have accounted for this. The man must have had interstitial nephritis; he had arteriosclerosis; and this, with the acute toxemia from his alcoholic debauch, could have caused the edema. A man of this type should have been a hypertensive case, but all blood pressure readings have been extremely low; the heart sounds weak, a systolic murmur at the apex. These things considered, we conclude that he had a failing myocardium.

About two months later he began to have a sensation of pressure in the upper abdomen. This sensation increased and fluid began to develop in the abdomen. Upon examination, the abdomen was distended and nothing felt until after a paracentesis, when the left lobe of the liver was found to be larger than the right, although the right was enlarged. Normally the left side is only one-sixth the size of the right. The blood picture at this time showed a high latent icterus; moderate secondary anemia, no leukocytosis. Urine had occasional white cells but no albumin until after the mercury had been given.

We are confronted now with what could cause enlargement of the liver. One of the first things we think of is cirrhosis. In a man his age and with a history of alcoholism over a long period of time, we would expect that he should have gone through the stage of hepatic enlargement and be now in the stage of "hobnail" liver,—small liver. There has been no high fever and no jaundice. Another thing we think of is new growth in the liver. The x-ray picture tells us there was some spasm of the sigmoid colon. Neoplasm in this area would likely metastasize to the liver and could produce a picture very closely stimulating this. But in carcinoma of the liver we expect marked jaundice, high fever, less pain. This patient's pain has not been referred to very much in his history, but the fact that he was given morphine during treatment as an out-patient would indicate the pain must have been severe. We might think of acute hepatitis, though the onset here is a little too insidious for that. There is no vomiting of bile, no septic temperature. The marked enlargement of the left lobe of the liver and its smooth outline, would lead us to think of liver abscess. It is reasonable to suppose that this man, with his occupation and habits, stayed in Boston and had never been in the tropics, also there is no septic temperature



## When is Diathermy of Value in Your Practice?

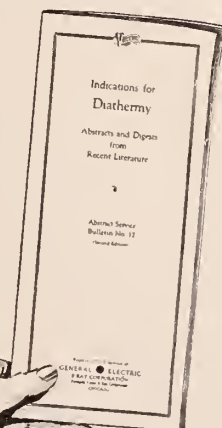
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and no leukocytosis, which we would expect in liver abscess.

Syphilis of the liver is what we think this patient had. He had a history of luetic infection of at least eighteen years standing. While syphilis of the liver is thought to be a rather unusual disease by some, particularly McCrae, it is thought by others that all cures of portal cirrhosis effected by the iodides are really cases of syphilis of the liver. In McCrae's series it is shown that a very high percentage of luetics developing liver lesions have been alcoholics; over one-third had been alcoholics to extreme degrees.

As in this case, the onset of disease is usually insidious, first the sensation of pressure in the upper abdomen and then enlargement of the liver. Jaundice is usually absent, although latent icterus is usually noted in the blood findings. Leukocytosis is not found. Pain is one of the most marked symptoms and enlargement of the spleen may be noticed. In this case most of the pain is over the splenic area, the upper left quadrant. Ascites is the most common symptom of all. It is stated that the differential diagnosis between cirrhosis and syphilis of the liver is difficult and almost impossible, except for the therapeutic test.

He was put on a luetic regime and apparently improved because he was discharged from hospital. We do not believe this would be true if he had cirrhosis or carcinoma of the liver. McCrae states that in the liver syphilis exhibits more of its unusual forms than any other place. The liver may present various degrees and combinations of diffuse fibrosis, gummatous infiltration, gummata, and amyloid degeneration,—it may even resemble acute yellow atrophy. It is stated that when gummata are absent, the enlargement may be fairly uniform and that a combination of gumma, scar tissue and amyloid change may produce huge tumor-like masses, which are more apt to involve the left lobe than the right.

#### DR. C. C. BENEDICT

As stated, this case presents very many characteristics of syphilis of the liver. It is quite evident that there was a marked history of chronic alcoholism over a great many years. We think it quite probable that the ground work was laid by this alcoholism over a period of years which has produced considerable damage to the kidneys. This, with the syphilitic infection which he acquired at the age of twenty-four and with the last alcoholic debauch, caused lighting up of the liver trouble, or possibly the development of it. He might have gone through acute enlargement of the liver at a previous time and subsequently developed a cirrhosis. It is confined almost exclusively to the left lobe. As brought out by barium meal, the examination of the abdomen at that time did not disclose anything because of the large amount of fluid present, but upon withdrawal of the fluid, it was noted that the left lobe was markedly enlarged. We believe, therefore, that this man had as a basis, an alcoholic involvement of the liver, probably cirrhosis, which became acute enlargement later on. We believe there must have been some interference with the return venous circulation to produce enlargement of the abdominal veins and over the lower chest. This must have involved the inferior vena cava else the dilation of the veins would not have been so general over the abdomen.

There is another thing mentioned in the history; a lumbar puncture was negative. I think that may be interpreted two ways; that attempt to do lumbar puncture was unsuccessful and they did not enter

the spinal canal, or that the spinal fluid was negative. If the spinal fluid was negative, they were probably looking for meningeal involvement or for Wasse mann.

There is a peculiar symptom in regard to the eyes; both eyes were turned to the left. It is quite evident there was a cerebral lesion; may call it cerebral accident, either hemorrhage or gumma. In order to illustrate what may have occurred I want to give you an idea of what had occurred in the nerve supply of the eye. The third, fourth and sixth cranial nerves principally supply the muscles of the eyeball. If you will note the external rectus is supplied exclusively by the sixth and that the nuclei of this pair of nerves are very close together. The three nerves supplying the internal recti arise from the nucleus near the posterior part of the third ventricle. A fasciculus of the sixth nerve is given off and travels along with the third to the internal rectus. You can see that the lesion in this region on the right side would produce pressure on the nucleus of the sixth nerve and would cut off the right internal and left internal, thus causing the ball of the eye to turn to the left. That is just what this patient showed. Consequently we believe that there is a cerebral accident, whether hemorrhage or gumma, that produced a paralysis of the right internal rectus which, in turn, produced this turning of the eyes to the left. Because this was of rather rapid development, we believe it must have been hemorrhage. Gumma should have been of somewhat slower development, although possibly a gumma might have developed slowly up to a certain point until there was pressure enough to produce paralysis. It may have been hemorrhage within the gumma, or edema of the gumma, which could produce the same condition.

He had arteriosclerosis, the brachials were tortuous, although the blood pressure is low every time it is taken. However it could be sufficient to produce a hemorrhage in the brain which, in time, would produce this paralysis.

It is quite evident some accident occurred in the brain; we do not believe morphine produced the coma, but coincident with morphine he developed coma which gradually deepened and it is our belief that hemorrhage occurred in the brain to produce this coma.

There is another thing in connection with the development of the paralysis; there was leg paralysis, leg symptoms, which showed an involvement of the pyramidal tract, in all probability a result of syphilis, and would tend to bear out the statement in regard to the findings in the brain. Another point, in his last illness, on last admission, it was noted that there were some moist rales at both bases.

We believe, first, that this man had tertiary syphilis, general; an arteriosclerosis; probably cardiac decompensation, syphilis of the liver along with the general syphilis; cerebral accident, as hemorrhage or gumma; with a terminal bronchopneumonia.

The following discussions of the case were given at the Clinico-Pathological Conference at the Massachusetts General Hospital (N.E. J. of M., June 20, 1929, p. 1301).

#### RICHARD C. CABOT, M.D.

I take it the Rosenthal liver function test was for half an hour, the ordinary period.

"Biphasic" of course means neither one thing nor the other if you are looking for a direct or indirect (obstructive or hemolytic) lesion, 1.28 milligrams

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of bilirubin per 100 c.c. would ordinarily be taken as normal. The Rosenthal test points one way and the van den Bergh the other.

I assume that salyrgan was not given primarily for possible syphilis, but as a diuretic. It is a rather popular mercurial diuretic at the present time.

#### DIFFERENTIAL DIAGNOSIS

I think we should try to anticipate what diagnosis was made in this hospital at the time of the first discharge. I will start from the most obvious physical sign, which is ascites. Ascites has five important causes, approximately in the following order: (1) heart disease, (2) kidney disease, (3) cirrhosis of the liver or other less common portal obstruction, (4) malignant disease obstructing the venous circulation in the abdomen, (5) tuberculous peritonitis. Taking those, we have some signs pointing toward the heart, but not enough I should say to make us say that this is cardiac disease with edema of the legs and ascites of cardiac origin. We have nothing in particular it seems to me to indicate any disease of the kidneys. We have nothing in particular that points to malignant disease; that is, we have no palpable tumors even when the abdomen has been emptied by tapping. We have no veins large enough to be important. We have no jaundice. We have no evidence of any trouble in the gastrointestinal tract. That is sufficient, I think. As to tuberculous, we have no fever. We have not the slight rigidity of the abdomen which is usually present. There is no history or other sign of tuberculous.

So in a heavy drinker with ascites and a big liver we should naturally say this is cirrhosis; but we have to consider of course the possibility that it is syphilitic cirrhosis, since there is a good deal in the history to suggest that he had syphilis previously. Enlargement of the left lobe I do not think is of much importance in differentiating plain cirrhosis and syphilitic cirrhosis. Syphilitic disease of the liver does not ordinarily produce ascites, however. If syphilis produces ascites, we generally call it syphilitic cirrhosis. No marked improvement followed mercurials. With syphilitic liver if it is not cirrhosis one ordinarily gets marked improvement with the administration of mercurials. The chances seem to me therefore that it is a non-syphilitic cirrhosis; but nobody can possibly prove this that I can see.

Nothing else in the body seems to me significant. In the interval between admissions the abdomen continued to fill up and the cirrhosis was going on.

The natural supposition seems to me to be that he died with the hepatic toxemia with which most cases of cirrhosis end. His irrationality, his gradually increasing coma are characteristic. On the other hand we do not ordinarily get Babinski in this particular coma, but there is no uniformity about results. If we do not believe, as I do, that this is simply the natural end of a case of cirrhosis, we shall probably have to assume some brain lesion, cerebral hemorrhage or some other vascular lesion in the brain. Of that we have very little evidence, no evidence of increased intracranial pressure and no focal symptoms. I see nothing that cannot be accounted for by poor liver function, which gives a picture not distinguishable from uremia. There is no clinical distinction between uremia and hepatic toxemia.

I have nothing more to say as to differential diagnosis. This should be ordinary alcoholic cirrhosis, or syphilitic cirrhosis, which I believe is less probable for the reasons given. I do not see why there should be any important lesion in any other organ. Of course we suspect enlargement of the spleen and

evidences of collateral circulation in the abdominal veins and about the root of the esophagus very possibly.

A Student: Would you consider the coffee ground vomitus the result of ruptured esophageal varices?

Dr. Cabot: I do not know what to say. In fact in the vast majority of cases in which we can prove real rupture it gives rise not to coffee ground vomiting but to profuse hemorrhage.

A Student: Do you attribute any significance to the eye paralyses?

Dr. Cabot: No; I do not see what significance to attribute to them. I think you will find as you come to the examination of comatose cases in hospitals that you will get very little out of examination of the eyes. You will find them doing all sorts of queer things. You will generally find nothing to account for these things. Pupillary changes, ocular paralysis, nystagmus, conjugate deviations I think very seldom help us.

A Student: Does a systolic murmur at the base mean a heart lesion?

Dr. Cabot: Not in my opinion; that is you can get it with nothing but moderate secondary anemia or moderate aortic arteriosclerosis, which I suspect from his history, without any lesion in the heart valves.

A Student: Was he given potassium iodide after his first discharge?

Dr. Cabot: I do not know. I suspect that he got quite a good deal of treatment for syphilitic liver. If we have real gumma there, gumma does respond to treatment, but not if the liver gets to the state of fibrous tissue. Then it does not respond to anything. I think it is good therapeutics to realize that if diagnostic study makes us believe that the kidney, liver, brain or any other organ of the body is the seat of fibrous tissue change, we are not going to affect that by any treatment whatsoever. I have often seen a diagnosis which supported that and treatment going on just the same as if they never suspected fibrous tissue.

#### CLINICAL DIAGNOSIS (from Hospital Record)

Cirrhosis of the liver.

Syphilis.

Cerebral hemorrhage.

DR. RICHARD C. CABOT'S DIAGNOSIS

Cirrhosis of the liver, probably alcoholic.

Ascites.

#### DR. TRACY B. MALLORY

##### ANATOMIC DIAGNOSES

1. Primary disease.

Atrophic cirrhosis of the liver.

2. Secondary or terminal lesions.

Esophageal varices with hemorrhage.

Ascites.

Emphysema.

This man showed a cirrhosis of the liver of atrophic, presumably alcoholic type. The weight of the liver was 375 grams. The shrinking was uniform on both sides. If anything was felt during the physical examination in the left upper quadrant I am sure it was not the left lobe of the liver but the spleen, which weighed 230 grams, about twice the normal size.

He had during the last few minutes of life an extremely severe gastric hemorrhage, the entire stomach and most of the intestinal tract being filled with bright red blood. That was the immediate cause of death.

The other organs were essentially negative. The heart was not hypertrophied. There was a slight degree of arteriosclerosis in the coronary arteries, but nothing approaching occlusion.

A Student: Was there anything in the brain?

Dr. Mallory: That was not examined.

A Student: Would you call this alcoholic cirrhosis or portal cirrhosis?

Dr. Mallory: I call it alcoholic cirrhosis. I do not believe there is any significance in the term portal cirrhosis. Under it are included such different entities as alcoholic and toxic cirrhosis and hemochromatosis.

A Student: Is this different from luetic cirrhosis?

Dr. Mallory: Entirely. I have no hesitation in saying it was not syphilitic cirrhosis. Syphilis of the liver is grossly very characteristic. It results from healed gummata which give deep cleft-like scars which extend into the liver substance three to four centimeters and tend to divide the liver into fifteen or twenty different lobes instead of the normal five. We do get diffuse cirrhosis of the liver from syphilis occasionally, but so far as I know in congenital cases only. It is very rare.

A Student: Was the liver surface very smooth?

Dr. Mallory: No; it was finely nodular or coarsely granular, somewhere in between the two. The nodules were less uniform and a little larger than in the average case of alcoholic cirrhosis.

A Student: Would you say stomach bleeding was the cause of death?

Dr. Mallory: Yes.

Dr. Cabot It is worth emphasizing that a hobnail liver is practically never felt during life; you see the hobnails post mortem. We do not get those nodules through the abdominal walls. If we get them they are generally cancer.

**AN INTRODUCTION TO THE STUDY OF PHYSIC:** (Now for the first time published). By William Heberden (1710-1801); a Prefatory Essay by LeRoy Crummer with a Reprint of Heberden's Some Account of a Disorder of the Breast; Portrait in Photogravure; Six Illustrations. Paul B. Hoeber, Inc. New York; \$2.00.

This is a most entertaining little book. It will be found to be actually fascinating to the student of medical history.

In Chapter 3, Page 85 Heberden says the: "Chemistry is of late so much enlarged, extending not only to natural philosophy, but even to a great number of mechanical arts, that it is necessary here, as well as in botany, when we are teaching the young physician how to get enough to warn him not to get too much, and this is the more necessary to be inculcated, as it is so very engaging a study."

Heberden's purpose in writing the manuscript seemed to be to give the prospective student of medicine the understanding of what might be before him.

The title of his chapters are as follows: Introductory Books; Botany; Chemistry; The Materia Medica; Pharmacy and Prescribing; Anatomy; Institutions; The History of Diseases and Their Cure; Surgery; Observation Writers and Miscellaneous Books; The Time for Beginning These Studies and of Commonplace Books; Of the Ancient Greek and Latin Medical Writers; Some Account of a Disorder of the Breast.

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chapter and sometimes there are three or four; but they are always short. The last chapter of the book is entitled: "Some Account of a Disorder of the Breast." He probably is describing angina pectoris. He evidently confused angina pectoris and pulmonary abscess and pulmonary embolism, as he speaks of some patients as spitting up blood and purulent matter.

William Heberden was born in 1710; died in 1801. He was a Cambridge graduate and was a Greek and Hebrew scholar.

His Commentaries, published in 1802, were written in Latin—the result of a lifetime of conscientious note-taking. In these are his original pictures of varicella, angina pectoris and nodules in the fingers which occur in arthritis deformans, and night-blindness. There are many subtle notations of clinical value in his Commentaries.

This little book by Crummer should prove to be highly interesting to a large number of physicians.  
O. H. B.

### CURRENT LITERATURE

**SHALL CANCER OF THE UTERUS BE TREATED BY SURGERY OR RADIATION?** George E. Pfahler, M.D., Philadelphia, Penna., The Penn. Med. Jour., Vol. XXXIII, No. 5, Feb., 1930, p. 21.

The patient has the privilege of choosing between surgery and radiation only in the early stages, and the chance of recovery will depend on the skill of the operator and facilities available. A patient will have a better chance with a well equipped and capable surgeon than with an unskillful or poorly equipped radiologist. The reverse is true, also. Surgery can be used in only three-tenths of the cases, and radiation or nothing must be used in the other seven-tenths. Surgical technic has been completely developed and available for twenty-five years; it has developed on the basis of the early cases, gradually undertaking the more advanced cases until the limitations have been reached. Radiation began with the inoperable and far advanced cases and having proved its worth in those cases, has gradually come to the treatment of the early cases. Radiotherapy is still developing and the more recent the statistics, the more favorable the results. In the operable cases, surgery and irradiation show nearly equal results; according to Lane-Clayton, of operable cases operated, 34.1 per cent showed a five year recovery, while operable cases irradiated, 35.8 per cent showed a five year recovery. Patients, therefore, have a perfect right to choose either method of treatment.

**TUMORS OF BONE. CLINICAL COURSE. DIFFERENTIAL DIAGNOSIS.** Dean Lewis, M.D., Baltimore, Md. New Eng. Jour. of Med., Vol. CCII, No. 1, Jan. 2, 1930, p. 11.

In fibroma osteitis and central giant cell sarcoma of bone, the diagnosis can usually be made by the x-ray; the lesion is most frequently found on the shaft side of the epiphyseal cartilage—the metaphysis, the bone is expanded symmetrically and the swelling is fusiform, extending down on the shaft. The shadow is lobulated, as the fibrous tissue is divided off by trabeculae of bone. The lesions are benign and diagnosis by x-ray is very important, as definite, conservative, surgical procedures can then be employed.

In periosteal sarcoma, when arising from the fibrous layer of periosteum, there is erosion of bone; when the tumor arises from the cambium, there is osteogenesis with accompanying destruction of the cortical bone. The x-ray shows bone destruction associated with bone formation.

In Ewing's tumor, there is relatively little medullary change in the early stages; there may be some expansion of the shaft with periosteal reaction. In its later course a considerable portion of the shaft may be affected, the tumor growing apparently without much resistance parallel to the long axis of the bone; at times it seems to infiltrate rather than destroy the bone.

Although the x-ray has contributed much to the differential diagnosis of bone lesions, there is as much need as ever of a good clinical history, and correlation of the clinical and x-ray findings.

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**THE VALUE OF THE X-RAY EXAMINATION IN PULMONARY TUBERCULOSIS.** Leo G. Rigger, M.D., Minneapolis, Minn. *Minnesota Med.*, Vol. XIII, No. 1, p. 25.

The technic of the x-ray examination of the lungs is of the first importance, as it is dangerously easy to obtain findings simulating early tuberculosis or to obliterate signs as the result of poor technic. The roentgenogram presents a fairly accurate picture of the pathology in the lungs. The absence of abnormal changes is the best and most conclusive evidence against pulmonary tuberculosis that we now have. In most cases the x-ray signs are present before the physical signs become apparent, and the presence of typical roentgen findings is positive evidence second only in certainty to finding tubercle bacilli in the sputum. It must not be forgotten, however, that abnormal changes may occur from many lesions other than tuberculosis, such as atypical bronchopneumonia, pulmonary congestion, acute bronchitis, chronic bronchitis and bronchiectasis, chronic or unresolved pneumonia and chronic lung fibrosis. In many cases the roentgen appearances will suggest activity or inactivity, though this cannot be said to be the rule. Also the appearances may indicate whether the lesion is exudative or proliferative. Cavities and military tuberculosis are much more definitely shown by x-ray than by physical signs.

**THE USE OF RADIUM IN THE TREATMENT OF UTERINE HEMORRHAGE.** Garry H. Holders, M.D., Jacksonville, Fla. *The Journ. of the Fla. Med. Assn., Inc.*, vol. XVI, No. 8, Feb., 1930, p. 335.

Uterine hemorrhage is not a disease but a symptom of many disorders, of which the following are discussed as being amenable to radiation: Cancers of the uterus; myomatous tumors of the uterus; functional or idiopathic uterine hemorrhage. The bleeding from cancer of the uterus is controlled by the natural regression which takes place following radium treatment. In fibroid tumor the degree of success in stopping hemorrhage with radium will depend upon the care of selection of cases; only about 40 per cent of the cases should be treated with radium. Cases of menorrhagia and metrorrhagia without tumor formation can usually be controlled by radium radiation; whether or not the treatment is best for the individual case can only be determined after careful analysis of the case. As a general rule radium should be used only in women at or near the menopause and where there is no pelvic inflammatory lesion present.

**DEEP X-RAY THERAPY** (Conclusions Derived from the Treatment of Five Hundred Cases.) A. C. Thash, M.D. and W. Pope Baker, M.D., Atlanta, Ga. *The Journ. of the Med. Assn. of Ga.*, Vol. XIX, No. 2 Feb., 1930, p. 58.

X-ray therapy is by no means confined to malignancies but many other stubborn pathological conditions are amenable. Therapeutic work has been done at 230 k.v., 15 to 30 ma., dist of 30 to 50 cm. copper and aluminum filtration, 200 to 600 mam. Dose is classed as lethal, para-lethal and reactionary. Condemnation of x-ray therapy is believed to be caused by over-treatment. Aim of the authors is not so much to remove the tumor growth in cancer as to cause its replacement by fibrous tissue sufficient to stop its growth; arrest can often be brought about without even perceptibly diminishing the size of the tumor. Most breast cancers are primarily surgical, but in most cases x-ray treatment should be associated. Good results have followed treatment of cancers of the abdominal viscera and success in this field is attributed to the fact that they are not over-treated. Among other conditions



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**INDICATIONS FOR THE USE OF RADIATION IN DISEASES OF THE FEMALE PELVIS.** W. S. Lawrence, M.D., Memphis, Tenn., Journ. of the Tenn. State Med. Assn., Vol. XXIII, No. 1, January, 1930, p. 17.

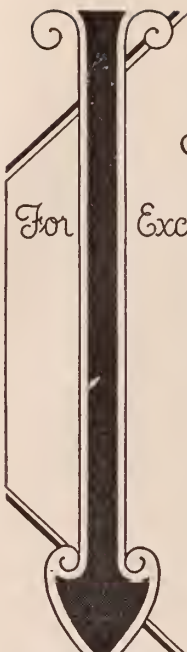
Two groups of conditions are discussed; first, those in which radiation is positively known to be of great value, such as carcinoma of the cervix, excessive hemorrhage near the menopause, fibroid tumors in women past the age of thirty-eight, menorrhagia and metrorrhagia in young women, and hypertrophy at the cervix with diseased cervical glands; second, infantile uterus, amenorrhea and sterility. With regard to carcinoma of the cervix, all cases should have both x-ray and radium. Uncomplicated fibroids in women past the age of thirty-eight should be treated by radiation and not by surgery. In the cases of menorrhagia and metrorrhagia in young women, good judgment is required but many can be successfully treated by radiation without permanent amenorrhea. In regard to the second group, the work of Werner is cited where young amenorrheic women in considerable numbers have been treated with resultant stimulation of ovarian function, and in many instances pregnancy resulted ending in full term labors. The author is conservative in his comment but thinks the work is well worth investigation and trial.

**THE GRAHAM TEST.** By Edward L. Young, Jr., M.D., Boston, Mass. New Eng. Journ. of Med., Vol. 202, No. 5, p. 219.

Two years ago this author reported end results in a series of cases of cholecystitis, which showed 63 per cent cured by operation. The present study was made to ascertain whether the use of the Graham test has helped the accuracy of diagnosis. The study includes 144 cases, 84 of whom were operated upon. Of the positive diagnoses based on the dye test, 88 per cent were correct for bile tract disease. Where the test was negative, 68 per cent were correct. The figures seem to show a considerable chance for error in the Graham test, which we must always remember is a test for function; therefore, the clinical evidence should always take precedence. The use of the test increases the accuracy of the diagnosis.

**IRRADIATION AS A MEANS OF TREATING CANCER.** Henry K. Pancoast, M.D., Philadelphia, Penna., The New Eng. Journ. of Med., Vol. 202, No. 3, January 16, 1930, p. 103.

The legitimate measures used in the treatment of cancer at the present include surgery, irradiation by radium and x-ray, electrothermic methods, cauterization, caustics, and the internal administration of some heavy metals in colloidal state. In some instances all the various methods are carried out by the same individual; in others they are administered by various members of a group or clinic. This paper stresses the application of irradiation in certain localities where there may be some difference of opinion and where special care in technic is required. In superficial malignancies certain factors govern the application of irradiation, such as cosmetic effect, minimum loss of tissue, depth of lesion, danger to other structures, etc. Radium is the agent of choice in basal cell carcinomas about the face. On the ear radium is used with care and combined with electrodesiccation when involvement extends to cartilage. The same applies to the nose. Lesions on the lower lip are treated all alike, as if



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they were the most malignant form, combining electrocoagulation whenever there is induration below the mucous surface; the lymph drainage areas are thoroughly radiated with x-ray. Lesions in the mouth offer a great field for radiation, early lesions yielding readily, while late lesions and those in certain unfavorable localities giving poor results. The larynx, esophagus, lung, stomach, large bowel, bladder, prostate, all are unfavorable localities for radiation treatment and little to be expected from any method now used. In cancer of the breast, information, opinions and technic are all very confusing, some excellent authorities giving good reports from combined treatment, others just as good claiming radiation adds nothing to surgical results. There is need for a thorough study of the question of breast cancer.

#### FACTORS THAT INFLUENCE PROGNOSIS AND END RESULTS IN UTERINE CANCER.

William P. Healy, M.D., F.A.C.S., New York. N. Y. State Journ. of Med., Vol. XXX., No. 4, Feb. 15, 1930, p. 191.

The important factors that influence prognosis and end results in uterine cancer are (1) early diagnosis (2) histologic characteristics of the tumor, (3) choice of treatment, (4) general constitutional condition of the patient. The prognosis and end results in uterine cancer vary according to whether operation or radiation therapy is the method employed. In group IV cases, operation gives uniformly bad results, while efficient radiation therapy gives surprisingly good results, 60 per cent of the favorable cases of cervical cancer and 50 per cent of the uterine body cases remaining well five years or more. The Wertheim hysterectomy has a fifteen per cent primary mortality in expert hands, which must be considered in choosing method of treatment. In the author's series of cases no cervical cancer in a patient under 30 years old survived five years.

### TRUTH ABOUT MEDICINES

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Checkr-Redi-Cooked Oats or Checkr Rolled Oats (Ralston Purina Co., St. Louis). Checkr-Redi Cooked Oats have been precooked to bring out their mellow flavor and to make them quickly prepared and easily digested.

Minute Gelatin (Minute Tapioca Co., Inc., Orange, Mass.) Pure granulated gelatin offered in convenient size cartons for household use. (Jour. A.M. A. March 1, 1930, p. 635).

Forlen's Sweet Chocolate Flavor Malted Milk (The Forlen Co., New York). It has the following average composition: fat 6.7%; protein 9.7%; sucrose 47.8%; other carbohydrates (maltose, dextrin, lactose) 31.6%; ash 2.4%; insoluble chocolate solids 0.4%; moisture 2.0%. This product differs from oth-

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e: chocolate malted milks in that the cocoa is cooked.

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Postum Cereal (Postum Co., Inc., Battle Creek, Mich.) It is made only of whole wheat and bran roasted with a small portion of sugar-cane molasses. It contains no caffeine.

Sac-a-Rin Brand of Canned Vegetables (Kings County Packing Co., Oakland, Calif.) Brands: California Tomatoes; California Asparagus; California Spinach. These are vegetables packed without added salt or sugar for dietetic purposes. For use when an intake of carbohydrate—particularly sugar—is to be restricted.

Sanka Coffee (Sanka Coffee Corporation, Brooklyn and Los Angeles). A blend of South American coffee with Mocha and Java. The caffeine is removed by a process which removes 97 per cent or more of the caffeine originally present in the bean (based on 1.1 per cent of caffeine.) It may be used when other coffee has been forbidden.

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Junket. (The Junket Folks, Chr. Hanson's Laboratory, Inc., Little Falls, N.Y.) To prepare the product the dried blown or salted rennets in ordinary salt brine is extracted. The enzyme is then precipitated by salting to saturation and the resulting precipitate is mixed with pure Worcester salt, dried and pressed into tablets. Flavored Junket consists of rennet powder, similar to that used for Junket Tablets, except that this is mixed with cane sugar and natural flavoring. While the rennin enzyme itself does not add to the fuel value of milk, it makes it more wholesome because of its digestive action on the milk.

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Quaker Crackels (The Quaker Oats Co., Chicago). This is composed of corn, wheat and oats.

Quaker Quick Macaroni (The Quaker Oats Co., Chicago). This is a new-type macaroni. A milk containing macaroni that cooks in five minutes instead of twenty. (Jour. A.M.A., February 8, 1930, p. 411).

Borden's Evaporated Milk (The Borden Co., New York City). It has the following average composition: fat, 7.85%; protein, 6.88%; carbohydrates, 9.6%; ash, 1.55%; total solids, 25.95%; water, 74.05%. The product is manufactured from whole milk. Borden's Evaporated Milk is advertised for infant feeding and for household use in making milk convenient for cooking. It is claimed that the milk is clean and sterile; that it resembles breast milk in ease of digestion; and that it produces fine flocculent curds.

Cream of Wheat (Cream of Wheat Co., Minneapolis). It is a product made entirely from wheat. It consists of the endosperm of the wheat, with only so much of the bran and germ as it is impossible to remove. The product is used because it is rich in energy content and easily digested.

Gerber's Strained Vegetable Products (Gerber Products Division, Fremont Canning Co., Fremont, Mich.) Brands: Gerber's Strained Spinach, Strained Carrots, Strained Green Beans, Strained Peas, Strained Prunes, Strained Tomatoes and Strained Vegetable Soup. Specially selected vegetables, steam pressure cooked and sterilized at high temperature. It is claimed that by excluding air and cooking under steam pressure without water, a greater conservation of mineral salts and vitamin elements is effected.

The New Pettijohn's (The Quaker Oats Co., Chicago). This product consists of the whole wheat grain. It is obtained by steaming and flaking wheat which has a tender bran, the bran being included in unground form. The product contains all the nutritive elements of whole wheat.

Post's Bran Flakes with other parts of Wheat (Postum Co., Inc., Battle Creek, Mich.). The product is composed of bran flakes with other parts of wheat, flavored with malt syrup and salt. It combines the advantages of wheat bran in a nourishing and appetizing food. (Jour. A.M.A., February 15, 1930, p. 485.)

Muffets (Irradiated) (Quaker Oats Co., Chicago). Whole wheat, cooked, crushed, drawn out to filmy ribbon of wheaten threads. Wound round and round, baked and toasted. Muffets (Irradiated) makes vitamin D available in a breakfast food for all ages except infants. It is not intended as a therapeutic agent to supplant cod liver oil.

Quaker Farina (Irradiated) (The Quaker Oats Co., Chicago). Farina passed under the rays of ultraviolet lamps until it acquires vitamin D. The product will improve calcium and phosphorus retention. It holds its irradiation under extreme conditions of cooking and storing.

Quaker Puffed Rice (Quaker Oats Co., Chicago).

This product consists of rice kernels puffed to eight times normal size, providing for easy assimilation and retaining important food elements.

Quaker Milk Spaghetti (The Quaker Oats Co., Chicago). The product is made from whole milk and wheat. (Jour. A.M.A., February 22, 1930, p. 559).

Hellman's Mayonaise (Richard Hellmann, Inc., Long Island City N.Y.) It is made from a blend of edible vegetable oils, vinegar egg yolk, spices and condiments beaten to a stable emulsion.

Minute Tapioca (Minute Tapioca Co., Inc., Orange, Mass.) It is made from tapioca flour. The flour is bolted, mixed with water, steam cooked, granulated and dried.

Association of Hawaiian Pineapple Cannery. On the basis of an average of representative samples of Hawaiian pineapples there is obtained a value of 88 calories per hundred grams of canned pineapple. There are better sources of a single vitamin, but as an all around source of vitamins the pineapple takes unusually high rank. Canned pineapple is an article of diet of substantial food value. (Jour. A.M.A., March 8, 1930, p. 716.)

The following products have been accepted as conforming to the rules of the Committee on Foods of the Council on Pharmacy and Chemistry of the American Medical Association:

Klim Powdered Whole Milk (Merrell-Soule Co.) It is whole milk from which all but about 2 per cent or less of the normal water has been removed by means of the spraying process of drying milk. It contains: fat, 28.0 per cent; protein, 26.7 per cent; lactose, 28.0 per cent; ash, 5.8 per cent; water, 1.5 per cent. Klim milk is used for supplementary

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Borden's Natural Flavor Malted Milk (The Borden Co., New York). It is a processed mixture of barley malt, wheat flour and whole milk, reduced to a powdered form. The product contains: fat, 9.2 per cent; protein, 15.5 per cent; lactose, 13.5 per cent; maltose, 38.6 per cent; dextrin, 20.2 per cent; ash, 3.8 per cent; moisture, 2.2 per cent. It is easily digested.

Mellin's Food (Fellin's Food Co., Boston). It is a milk modifier. It contains: fat, 0.16; protein, 10.35; maltose, 58.88; dextrins, 20.69; soluble carbohydrates, 79.57; salts, 4.30; water, 5.62. Mellin's Food is a soluble, easily digestible dry extract made from what flour, wheat bran, malted barley and potassium bicarbonate.

Mellin's Food Biscuits (Mellin's Food Co., Boston). They contain a large percentage of Mellin's Food. (Jour. A.M.A., April 12, 1930, p. 1145.)

### PROPAGANDA FOR REFORM

Citrin Not Acceptable for N.N.R.—The Council on Pharmacy and Chemistry reports that Citrin is marketed by the Table Rock Laboratories in the form of capsules claimed to contain "50 mgm. cucurbiticin," the latter being "a nontoxic glucosid-saponin processed from the seed of the watermelon (*Cucurbita Citrullus*)".

In the information submitted to the Council, Citrin is stated to be "the crude extract" obtained from the watermelon seed. The available evidence does not indicate that the product is a pure glucoside. Citrin is stated to be "for the treatment of hypotensive cardiovascular disease" and is advertised as "The new therapy for vascular hypertension. The Council reviews the available evidence for the usefulness of Citrin and explains that the question at issue seems to be whether the observed lowering of blood pressure by drugs is of any great clinical value, and, when this does occur, to what extent it is due to the drug and to what extent to other factors. Altogether, the Council concludes that the clinical evidence does not establish the therapeutic usefulness of Citrin; hence, the Council declared Citrin unacceptable for New and Unofficial Remedies. (Jour. A.M.A., April 5, 1930, p. 1067).

Haley's M-O Magnesia-Oil Not Acceptable for N.N.R. and Magnesia-Mineral Oil (25) Haley Omitted from N.N.R.—The Council on Pharmacy and Chemistry reports that Haley's M-O Magnesia-Oil (exploited with the emphasis on "Haley's M-O") is the name under which the Haley M-O Co., Inc. has marketed a mixture of magnesia magma (milk of magnesia) and liquid petroleum; that the firm requested acceptance of the product for New and Nonofficial Remedies stating that it is composed of magma magnesia 75 per cent by volume and liquid petroleum 25 per cent by volume; that the Council refused admission of the product to New and Nonofficial Remedies because the use of a mixture of liquid petroleum and magnesia magma in fixed proportions under an uninforming name is detrimental to rational prescribing; and that the preparation was accepted after the firm had adopted the name Magnesia-Mineral Oil (25) Haley and had revised its advertising to make it acceptable. After the Council had repeatedly been obliged to object to the advertising, the firm wrote to the Council that its attempts to meet the requirements of the Council were proving financially unprofitable and that it had decided to go back to the old name "Haley's M-O". This means that physicians will again be

asked to use this simple pharmaceutical mixture under an uninforming name. The Council directed the omission of Magnesia-Mineral Oil (25) Haley from New and Nonofficial Remedies and declared Haley's M-O Magnesia Oil ("Haley's M-O") unacceptable for New and Nonofficial Remedies. (Jour. A.M.A. April 5, 1930, p. 1067).

Corozone. The Corozone unit is a small portable ozonator which can be operated on the ordinary electric light circuit. Ozone in sufficient concentration to kill bacteria is not suitable for ordinary respiration because of its irritant action. Ozone cannot be used as a substitute for good ventilation in a room any more than deodorants or perfumes can be used as a substitute for bathing the body. There has been no sound scientific work brought forward to show that there is any place whatever for ozone in problems of ventilation. (Jour. A.M.A., April 5, 1930, p. 1089).

John R. Brinkley, Quack. John R. Brinkley of Milford, Kansas, has for years been quacking it but, having his own so-called hospital, it has been possible for him to keep his own records, so that only by accident do the results of his work become public. The newspaper publicity that has recently been given to Brinkley is beginning to bring to light some of the crudities of his work. Brinkley's "specialty" is the alleged sexual rejuvenation of the male by the (also charged) implantation of goat's testicles into the human scrotum. Naturally, the deluded individuals who go in for this particular line of medical humbug are not going to complain after they have found that they have been swindled. If Brinkley had been shrewder, he would have confined his quackery to this particular field. More recently, however, he has been going into the treatment (still, alleged), of prostate trouble and, naturally, men do not have the same hesitancy about discussing operations for the relief of pathologic conditions of the prostate that they do in talking about sexual rejuvenation. The Kansas City Star, which has been giving its readers a great deal of information about Brinkley's methods, has now published some interesting material from Brinkley victims who throw light on the way in which he uses his radio station to get in touch with persons and how he treats them at his hospital. (Jour. A.M.A., April 26, 1930, p. 1339.)

The Baker Ballyhoo. Norman Baker, the high-pressure gentleman at Muscatine, Iowa, who has recently invaded the medical field with two quack cancer cures—those of Ozias and Hoxsey—continue to get publicity. This in addition to the very good job that he does over his own radio station, KTNT. Recently newspaper accounts have appeared stating that Baker had claimed that an attempt had been made on his life and that an attempt had been made to blow up his radio station. These reports were not confirmed. The only other newspaper items that have been noted regarding Baker are the reports of cancer victims who have died following the Baker Institute "treatments." (Jour. A.M.A., April 26, 1930, p. 1340).

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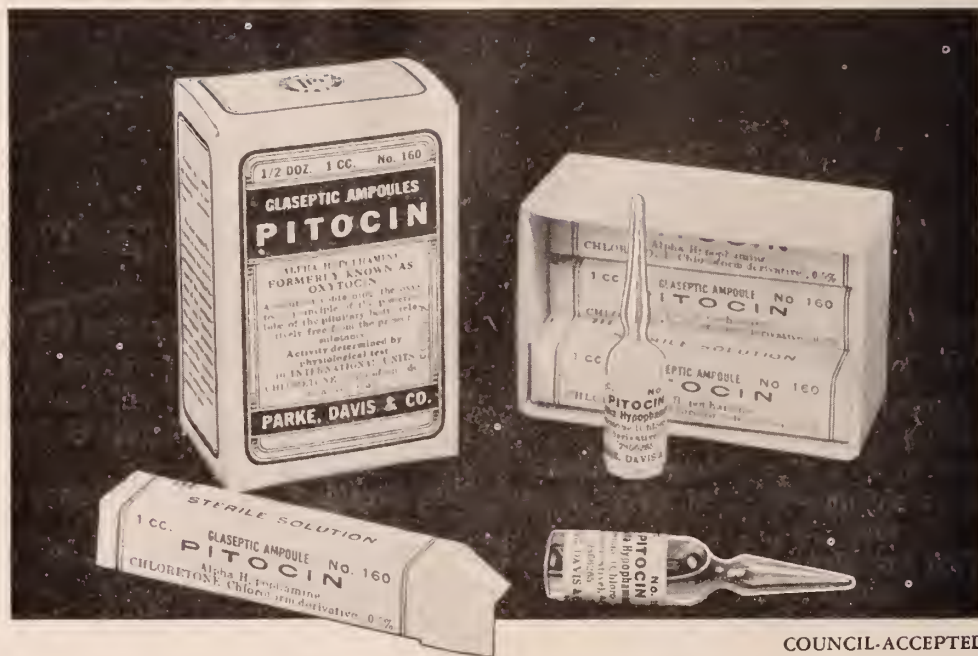
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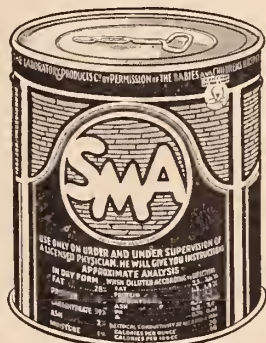
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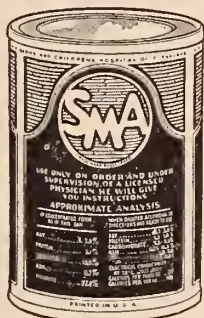


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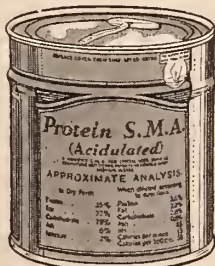
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Volume XIV.

JUNE, 1930

THE N.Y. A No. 6  
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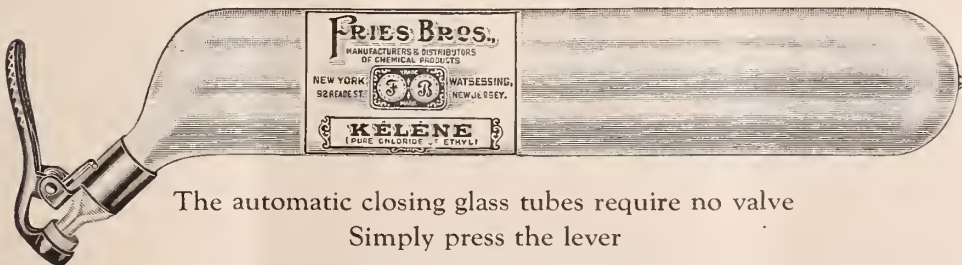
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	Grams	Prot.	Fat	Carb.	Cal.
1 tablespoon Knox Sparkling Gelatine	7	6	....	....	....
¼ cup cold water, 1½ cups hot water	....	....	....	....	....
1 teaspoonful whole mixed spices	....	....	....	....	....
½ teaspoon salt, ¼ cup vinegar	....	....	....	....	....
½ cup chopped cabbage	50	1	....	3	....
½ cup chopped celery	60	1	....	2	....
¼ cup canned green peas	40	1	....	4	....
¼ cup cooked beets, cubed	40	1	....	3	....
Total	10	....	12	88	....
One serving	2	....	2	15	....

Soak gelatine in cold water for five minutes. Bring to boil water, salt and spices. Pour on gelatine to dissolve it and add vinegar. When jelly is nearly set, stir in the vegetables, pour into mold and chill until firm. Unmold on lettuce and serve with salad dressing. Garnish with sprig of parsley or strip of pimento.

### JELLIED CHICKEN IN CREAM (Six Servings)

	Grams	Prot.	Fat	Carb.	Cal.
1 tablespoonful Knox Gelatine	7	6	....	....	....
¼ cup cold chicken broth or water	....	....	....	....	....
1½ cups boiling chicken broth, fat free	....	....	....	....	....
½ teaspoon salt	....	....	....	....	....
Pinch pepper	....	....	....	....	....
1 cup cooked chicken, cubed	125	24	20	....	....
¼ cup cream, whipped	55	1	22	1.5	....
Total	31	44	1.5	526	....
One serving	5	7	....	88	....

Soak gelatine in cold liquid for five minutes and dissolve in hot broth. Season with salt and pepper and chill until nearly set. Fold in chicken and whipped cream. Turn into molds and chill until firm. Serve on lettuce or garnish with parsley and strip of pimento.

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## THE NATURE OF SYMPTOMS

F. M. POTTENGER, M.D.  
Monrovia, California

(Read before the Thirty-ninth Annual Meeting of the Arizona State Medical Association, at Phoenix, Arizona, April 24-26, 1930.)

### PATHOLOGICAL ANATOMY VERSUS PATHOLOGIC PHYSIOLOGY

Present-day medicine owes the superiority which it possesses over the medicine of the centuries past particularly to a number of developments which began in the middle of the last century and which are still going on.

It is impossible for a subject so many sided as medicine to unfold logically. Its progress must follow the direction of those who, at the time, are able to impress the leaders in medical thought most; so an orderly, logical unfolding is not to be expected. The transference of certain disease syndromes to the organs or systems which give origin to them took place early and was the cause which inspired the study of anatomy. It was natural to want to know the difference between a normal organ and the same organ when it was the seat of disease, hence the development of gross pathology.

After the use of the microscope became general it was utilized in the study of both normal and pathologic tissues and histology and microscopic pathology were developed. These structural phenomena seemed so important and so fundamental to the understanding of diseases, and, at the same time, their study became so fascinating, that they early dominated the whole subject of medicine. Clinicians seemed to forget for the time being that their major problem in the practice of medicine was to understand and correct symptoms which are for the most part due to deranged function. The tendency to get farther away from the study of deranged function was increased by the next

great development in medicine,—that of the bacterial cause of disease.

The study of the structural changes, particularly those caused by microorganisms and the desire to know every minute phase of bacterial growth and development put microscopic medicine to the fore, and completed the establishment of the hierarchy of structural pathology. Thus the study of structure developed much faster than the study of function. It carried with it elements of accuracy hitherto unknown to clinicians, and so was greatly appreciated and readily accepted. This accuracy was such that it could be duplicated in the study of symptoms neither by the knowledge then at hand, nor by the knowledge since developed; for the study of function is surrounded with much greater difficulties than the study of structure.

In studying function one is confronted by many variables, each of which may modify symptoms of disease. Symptoms may be thus modified by inherited characteristics, physico-chemical differences, endocrine predominances and different states of nervous stability or instability that are found in different patients, or in the same patient at different times. All of this again may be influenced by stimuli which arise either in the physical, emotional or psychical domain. When we realize that every disease process has its psychical side and its basis for emotional upsets as well as its physical aspects, we can see how the study of function is beset with great difficulties, and how natural it was for its development to be one of the late accomplishments of medicine.

Now that the study of structural pathology has advanced to a fairly satisfactory state, the development of functional pathology, aided by the methods developed and the facts established, should go on much more



rapidly than has been heretofore possible. It is the particular phase of medicine above all others which, at the present time, is demanding our interest and intelligent consideration.

The one significant fact about the physiologic aspects of medicine, as contrasted with its anatomical or structural aspects, is that in its study our minds are directed largely to the study of the patient who has the disease; to him, too, in both his physical and psychical spheres for disease affects and is modified by both spheres.

Pathologic changes in tissues and organs cause little concern to the patient who harbors them until they produce departures from the normal function in tissues and organs. These at once assume the importance of symptoms of disease, and effect real and definite changes in the individual's feeling of well being or in his outlook for future enjoyment and accomplishment.

The clinician must ever struggle to understand and alleviate the symptoms which he encounters in his patients. It matters not whether some structural pathology underlies them or not. If function is disturbed, it is the duty of the physician to find out why, in order that he may guard the best interests of the patient.

We shall now attempt to further elaborate this subject by analyzing a few concrete examples, hoping thereby to stimulate thought and further discussion.

#### IMPORTANCE OF ETIOLOGIC STUDY OF SYMPTOMS

In the fall of 1908, when palpating the chest of a patient suffering from active tuberculosis, I found that certain skeletal muscles were in a state of spasm. I considered this as probably due to the same mechanism that produces spasm of the abdominal muscles in appendicitis, gall-bladder disease and ulcer of the stomach. But when I endeavored to find out what that mechanism might be, to my great surprise I learned that the explanation of it was not only not common knowledge, but that it was understood by very few.

I then set about to find out how pulmonary inflammation could produce spasm of the muscles of the shoulder girdle. This led me into the study of the nerves of the lung, which, belonging to the vegetative system, had at that time received but scant attention at the hands of physiologists. In fact, physiologists had not yet worked out the reflex paths from the lung. Serious study of the visceral nerves was just beginning to be prosecuted by a few men. Langley, Ander-

son, Gaskell and Cannon had been experimenting on animals and were able to give account of certain experimental phases of the subject. Eppinger and Hess soon published their conception of Vagotonia; and Higler and Muller followed with a more general description of the clinical phases of visceral neurology. Since then the subject has been occupying an increasing amount of space in literature, but is still far from receiving the consideration that its importance demands.

I found that it was not only this new sign in pulmonary tuberculosis that was not understood, but symptoms in general were simply accepted as entities, without an adequate conception of the reason for their existence.

When I had obtained only a meager conception of visceral neurology, I saw how essential its development was to the understanding of clinical phenomena. I recognized that most of the symptoms of tuberculosis could be expressed in terms of disturbance in the vegetative nervous system. I then saw that the same was true of symptoms of other diseases. It seemed clear to me that the symptoms of tuberculosis were caused in one of three ways, and that all of the twenty or thirty common symptoms which accompany pulmonary tuberculosis could have but three etiologic factors; (1) the toxins of the disease; (2) stimuli arising in the inflamed lung and expressing themselves in reflex effects in other structures; and (3) effects produced locally by injury caused by the pathologic process.

It is evident that symptoms falling in groups one and two are definitely caused by disturbances in physiology produced for the most part at some distance from the seat of the disease, and that even those of group three are partly of physiologic origin. The increased permeability of blood vessels which permits of the passage of blood through their walls is a disturbance of normal physiologic function; the increased secretion which results from the increased activity of the mucous glands is caused through nerve stimulation; the pain and muscle tension which accompany pleurisy are evidence of nerve irritation, the seat of stimulation being transferred to the parietal pleura; and many of the symptoms of the so-called "cold" are of physiologic nature. This leaves the rupture of blood vessels; the secretion caused by necrotic foci which carries the bacilli; and the effusion in the pleura or the proliferation resulting from the pleural inflammation only as being distinctly of structural nature.

It is difficult to estimate the total number of symptoms that can be produced by a pul-

monary tuberculosis. There may be (1) so many as there are systems affected by the toxins; (2) plus the number expressed in systems and organs which may be brought into reflex connection with the lung through neurons which mediate with the afferent neurons which carry impulses from the lung; and (3) plus those produced locally by the inflammatory reaction. I have personally described some forty reflexes alone, which must be augmented by symptoms of toxic and local origin to make up the total number.

The chief fact that has been impressed upon me by this study is the unity of the human body, and the manner in which activity in one organ or system is correlated through nerves and chemical substances with effects in other organs or systems. It shows the futility of attempting to divide the study and practice of medicine into specialities of this and that organ, or this and that system; for diseases do not limit themselves in that way. If there is any illness in the body anywhere, the whole individual is sick, the only difference is in degree.

There is an emotional factor in every disease, which may cause distinct symptoms of its own through the thalamic centers. So simple a thing as a burned finger may affect every system of the body through the ramification of the sympathetic nerves which in the presence of pain receive stimulation through the thalamic centers. The same is true of tonsillitis, pneumonia, pyelitis, septicemia, or any other disease accompanied by pain, toxemia, or emotional stress; for toxemia and emotional stress, like pain, produce widespread effects through central stimulation of the sympathetico-adrenal system. The whole body is made sick by pain and toxemia and emotions, but in some instances, as in the burned finger, the effects are so slight that very little or no recognizable disturbed function results but let the lesion be more severe and even a burned finger may at least produce recognizable vasomotor phenomena and inhibitory effects upon appetite and digestion.

As stated above, symptoms of disease are for the most part disturbances in function. Function may be so simple a thing as the taking up or giving off of salts or nutritive substances by the cells; but such is not a comprehensive statement of the function of a complex and complicated organ or system in the body or of the body itself. Function in this sense means activity in cells, organs or systems by which their normal physiologic purpose of action and correlation of action is expressed for the good of the individual.

Disturbed function then, as we recognize it as an expression or symptom of disease, means a departure in the normal purposeful working of some organ or system, or all organs and systems constituting the body. There is an instability or even a more complete disruption of normal activity brought about in the physiologic functions of the body. This disturbed function may be due to a change in activity in any portion of the neurocellular mechanism which is responsible for normal action. The colloidal make-up of the cell itself; the electrolytes which are necessary to its function; chemical substances such as hormones, toxins and so forth, which reach it through the circulation, or the nerves which transmit stimuli to it; one or all may be at fault.

#### SYMPTOMS AND THE VEGETATIVE NERVOUS SYSTEM

I have learned to think of symptoms of disease in terms of the vegetative nervous system which supplies the structures which show faulty action. This has to recommend it the fact that all structures of the body are supplied by vegetative fibers belonging to the sympathetic system and many of them have parasympathetic innervation as well. Stimulation or inhibition in these systems means a fairly definite action. Then, too, these two systems of vegetative neurons have each their particular function to perform for the organism. The parasympathetic system is the one that presides over the digestion and assimilation of food and the maintenance of the human body as a working machine; the sympathetics, on the contrary, comprise those neurons which protect the individual against enemies, prepare him for fight or flight, and help him to make a supreme struggle in the face of danger. The parasympathetics build up the organism; hence are anabolic in action; the sympathetics tear down, hence are catabolic.

In case we have a predominantly sympathetic action in the body, some of the following symptoms will be present; erection of the hairs, sweating, widening of the pupils, salivary inhibition, relaxation of the bronchi, increased pulse rate, elevation of blood pressure, increase of sugar in the blood, and a decrease in the motor and secretory functions of the gastrointestinal tract. A predominantly parasympathetic action is responsible for contraction of the pupil, increased secretion of the glands of the nasal and oral mucous membranes, constriction of the bronchi, slowing of pulse rate, lowering of blood pressure, storage of sugar in the liver, and an increasing of all activity,



whether secretory or motor, throughout the gastrointestinal canal.

By knowing these various effects one may readily classify disturbed function in organs which have double innervation according to the expression of activity of one or the other system of vegetative nerves without necessarily implying that the cause is in the nerve itself; for it may be in any component of the neurocellular mechanism. The effect, however, is more or less distinctly a hyper- or hypofunction, and so may be thought of in terms of the vegetative nerves supplying the structure.

Thus, increase in the number of heart beats means a sympathetic effect, while a slowing of the heart is a parasympathetic effect. Dilatation of the pupil is a sympathetic effect; constriction, a parasympathetic. Asthma consists of contraction of the bronchial musculature and an increase in the secretory activity of the bronchial glands, together with an exudation in the tissues which may be considered as a part of an increased vascular permeability, all of which is a part of a parasympathetic picture; and, so on.

#### ANALYSIS OF SYMPTOMS APPEARING WITH CHANGES IN BLOOD SUGAR LEVEL

Now, as illustrating the value of such a mode of analysis, let us take, as an example, a condition of equilibrium maintained in the body such as the sugar level of the blood.

The sugar of the blood is maintained at a fairly constant level under many and varying conditions and circumstances of health. When large quantities of sugar—too large for immediate utilization—are consumed, the excess is stored in the liver in the form of glycogen, to be given out in the natural course of events, as needed by the muscles; or as artificially called for after insulin has depleted the blood supply, as is seen in experimental hypoglycemia.

By studying the effects of insulin upon this store we can see a delicate physiologic balance. When insulin is given in such quantities as to reduce the glucose below 70 mgs. per 100 c.c. of blood, the hypoglycemic state may supervene. This state is met by a defense reaction on the part of the body brought about by the sympathetic nerves and the adrenal bodies coming to the rescue and forcing sugar out of its storehouse into the circulation. The rapidity of the pulse, the dilatation of the pupils, and the profuse sweating are further evidence of increased sympathetic action. If the sympathetico-adrenal system fails to restore the necessary amount of sugar to the blood and the amount of blood sugar continues falling, convulsions

may appear. Convulsions stimulate still further the sympathetico-adrenal system and if the liver still contains an ample store of glycogen, the reaction may be able to force sufficient glucose into the blood stream to relieve the hypoglycemic state, and with it the convulsions; but if not, death may ensue.

Stimulation of vagus fibers supplying the pancreas causes an increase in insulin output, which produces a parasympathetic effect which again is met and counteracted by the sympathetico-adrenal mechanism, as previously mentioned.

#### ANALYSIS OF SYMPTOMS ACCOMPANYING TOXEMIA

Another very interesting study from the standpoint of symptoms is that of the toxic state. Toxemia is followed by a chain of many symptoms such as fatigue, chill, aching, fever, loss of strength, increased nervousness, insomnia, rapid heart action, dilatation of superficial blood vessels, sweating, dry mouth, lack of appetite, lessening of the secretions and the motor functions of the gastrointestinal canal, increased respiratory effort and either a leucopenia or a leucocytosis, according to whether the white cell regulating mechanism is depressed or stimulated.

If we think of these many symptoms as individual expressions of physiologic disturbance, we are confused, for individually they fail to give us any concrete picture of what is going on as a result of disease. If, however, we think of them as being symptoms called forth by a toxic state, we have made some progress; but are still far from having any definite intelligent grasp of what they mean. But if we think of them as being a part of the manner in which the body expresses its attempt to defend itself against injurious poisonous substances which are brought to it by an infection or by other means, a part of the defensive mechanism which has been called out, then we have a definite method of approach, but one which still requires a great deal more information before we can offer an explanation of their cause.

In attempting to account for these symptoms and make them understandable, the first thing that must impress a student of visceral neurology is that they are expressions of stimulation of the sympathetic nervous system and its inseparable adrenal gland.

This toxic state is very apt to be characterized in terms of temperature which is only one of its most prominent expressions. What should come to one's mind is that the toxic state calls out a general response on

the part of the sympathetico-adrenal system. The thyroid, too, must be considered as a part of this system. This is the particular system which has for one of its chief functions the preparation of the individual for physical defense and the sustaining of him during the period of struggle. So we now get a closer view of what our toxic symptoms mean. They are an expression of certain states which are brought about in the body in order to defend it against some poisonous substance; in the case of bacterial disease they are expressions which accompany the specific immunity response, and probably are necessary to its establishment.

This toxic reaction of the body differs somewhat but only in details of expression from the defense against outward foes. The difference seems to be due to the fact that the effect is released from within by a toxic chemical element. The general peripheral expression, however, is the same, consisting of those effects which are produced by stimulation of the sympathetico-adrenal system.

Cannon and his co-workers have shown that the bodily states which are called out by such major emotions as fear, anger, grief, preparation for fight or flight, and pain, produce their effects by stimulating certain nerve stations in the thalamus; so, too, because of the similarity of symptoms we must suspect this part of the brain to be the recipient and distributor of impulses in defense of the body in toxic states. The expression of anger and rage is a primitive function, likewise the function of defense was necessary and exercised before the cerebral cortex was developed; and while the cortex can inhibit to a certain degree some of the emotions which call out physical defense, yet such function is largely reflex in character and put into effect without volition. The defence against toxins seems to be wholly out from under cortical domination and in this way differs from physical defense.

With present knowledge, we are not in a position to state definitely that toxic effects may not be expressed in the cells of the body generally, aside from those produced through the sympathico-adrenal system; but from analyzing the effects shown, it seems quite clear that there is not only a lack of stimulation, but an actual inhibitory effect exerted by toxins on those structures which are activated by the partsympathetic system, as may be inferred from the effects shown on the heart, the salivary, gastric, intestinal, pancreatic and biliary secretions, on hunger and digestive peristalsis and on the bronchial musculature and glands. As a part of the toxic syndrome all of these systems are made

conspicuous by the depression in activity which characterizes them. This indicates that toxic effects are expressed in sympathetic syndromes in the same manner as such major emotions as fear, anger, rage, pain and defense against outward foes, and such minor emotions as those caused by worry, discontent, unhappiness and pessimism.

The body's reaction to toxins, whether bacterial or nonbacterial, is always shown in the same way. Infections caused by pathogenic bacteria of all kinds are accompanied by a response which is qualitatively the same whether they be diphtheria bacilli, typhoid bacilli, streptococci, tubercle bacilli, or the causative germs of measles and smallpox.

It was suggested by Vaughn several years ago that there are two factors in bacteria which produce reaction; the one specific and capable of stimulating the immunity mechanism of the host; the other toxic and responsible for the toxic reaction. Further evidence sustaining such a conception has recently been adduced in the study of the tubercle bacillus in which it has been shown that a certain saccharid fraction which is attached to the protein molecule is responsible for highly toxic effects. Vaughn thought he had proved that the toxic element was not a carbohydrate, but more recent methods of study seem to indicate that the toxic element in tuberculoprotein at least is. Be this as it may, the usually recognized rise of temperature with malaise, aching, rapid pulse, and decreased activity in the glandular and muscular functions of the gastrointestinal canal consistently accompany immunity responses of the body to infections.

The toxic reaction may bring about conditions advantageous to specific defense even though not caused by specific immunizing substances. As a result of the reaction the patient's resistance to toxins is undoubtedly increased; from the rise in temperature the physico-chemical reactions of the body are quickened, and the immunity mechanism is permitted to act with great efficiency; and at the same time, the increase in the temperature of the tissues makes them unfavorable for the growth and multiplication of microorganisms.

It must be evident to the student of clinical disease that there is not a single symptom in the group of toxic origin that is pathognomonic of any particular disease. Measles, whooping cough, tonsillitis, typhoid fever, tuberculosis, pneumonia, malaria, and all other infections show similar toxic reactions, differing only in degree. The same temper-



ature and the same other symptoms may be produced by the injection of egg-white, Witte's peptone, or other protein substances. The curve of the temperature may be made to imitate the curve found in any of these infections by varying the dosage, in size and interval.

The important point regarding the toxic reaction is that it represents general nerve disturbance with a preponderantly peripheral effect expressive of stimulation of the nervous system. The same general symptoms are also found in such nervous states as neurasthenia and psychasthenia, also in many conditions significant of endocrine imbalance. Even a slight rise of temperature may be present in individuals who have an unstable nerve balance. Realizing that eighty-five per cent of the heat of the body is thrown off through the skin, and further realizing that a temperature curve only represents the balance between heat production and heat elimination, one may readily see how an individual might show a slight elevation of the temperature curve, if the vasomotors of his skin were slightly stimulated, even though there were no toxins set free in the body to produce the reaction.

It must be evident then that the members of the toxic group of symptoms are not of particular diagnostic worth, when considered apart from symptoms of the reflex and local groups. The temperature curve, however, varies according to the size and the frequency of the dose of toxins absorbed, which differs with different diseases to such an extent that the older clinical observers learned to associate definite types of temperature with definite diseases. Thus they recognized a certain type of temperature for typhoid fever, another for malaria, and still another for tuberculosis, et cetera.

#### A STUDY OF REFLEX SYMPTOMS

No group of symptoms is more fascinating for study than those of a reflex nature. Every organ is supplied by sensory or afferent nerves, and if it should become the seat of an inflammatory process, or if for any other cause, it should give origin to stimuli of undue strength, it has within it the possibility of originating reflexes. These reflex effects, if mild, may be dissipated without calling out any demonstrable changes in function of other organs or tissues; or, if severe, may cause serious and widespread disturbances in function.

For the purpose of producing reflex effects, every efferent nerve in the body may be brought into contact with impulses which are carried centralward over any afferent neuron, as must be evident in the universal

spasms set up in the animal whose synapses have been affected by strychnin poisoning. A touch on any part of the body, a noise or a sight of something exciting may throw the animal into general convulsions.

Afferent nerves in internal viscera are not so necessary for defense as they are on the surface of the body which is exposed to constant danger of injury. The protected situation of the viscera does not call for quick response on their part to such stimuli as those of a cutting, burning, tearing or pinching nature to which the superficial structures of the body are exposed. Such stimuli as these, in the other hand, are commonly met by exposed portions of the body and require that special receptors for them be distributed everywhere over its surface in order that it may quickly respond with defensive reaction and avoid injury. Nevertheless, the viscera are supplied by afferent fibers, though relatively much fewer in number, which carry impulses back to the central nervous system and transfer them to other neurons through which action may be brought about. The effects so produced depend upon the severity of the stimulus, the frequency of its repetition, the time over which it extends, and the function of the neuron to which the stimulus is transferred. The effect may be contraction of a muscle; it may be a secretory effect; it may be a sensation; or, if the injury lasts a long time, it may be a trophic effect.

Many reflex effects are physiological and take place in conditions of normal health. A certain and important control of body function is due to the correlation of activity of separate and even widely separated structures, and this control is brought about normally by impulses which are picked up by the sensory organs in the tissues and carried centralward by afferent neurons and transmitted within the central nervous system to neurons which affect activity in the tissues of their peripheral distribution. In case of disease or injury of any of these organs the normal reflex pathways are made to carry the abnormal impulses generated by inflammation or other irritation, and, instead of there being a mild stimulation effecting a benign influence, there is an unusual stimulation with tendency to disturb and distort function; and, if continued sufficiently long, to work permanent injury to the organism.

These reflex effects become an important cause of symptoms in many diseases. Any disease which causes an inflammatory process in the tissues may cause reflexes. Hence reflex symptoms come to be an important part of all inflammatory diseases which are

localized in internal viscera. Reflex symptoms are also caused without inflammation being present whenever abnormal stimulation of afferent neurons takes place. In this way pain and cramps may result from abnormally strong peristaltic action in different portions of the alimentary tract.

Little progress can be made in the understanding of the clinical manifestation of such pathologic processes without a working knowledge of visceral neurology.

By knowing the innervation of the organs, and the segments in the central nervous system in which the majority of the impulses are most apt to form reflexes, and then by understanding the laws under which reflexes normally take place, as well as the laws which govern their variation, one will find that reflex symptoms of disease take on a new and definite meaning.

#### REFLEX EFFECTS FROM INFECTED TEETH

A toothache, if one understands reflex relationships, may become a very interesting study. During the toxic stage symptoms of sympathetic stimulation are prominent, being caused by both the toxins and the pain. But aside from that the reflex effects are very interesting. The teeth are supplied with sensory fibers by the Vth cranial nerve. The pain of toothache may be expressed in a wide area; first, in and about the tooth itself, and, second, over the superficial sensory fibers of the Vth nerve, particularly of the maxillary portion in case of an upper tooth and the mandibular portion if it is a lower tooth. Reflex lachrymation may be caused, particularly if an upper tooth is involved, by the impulse being carried centralward and then being transferred to the VIIth cranial nerve which supplies the lachrymal glands. Likewise, an increase of nasal secretion through the VIIth supplying the nasal mucous glands; and sometimes salivation through the VIIth and IXth nerves. Often, too, reflex nausea and vomiting are shown on the part of the gastrointestinal canal. Locally pus formation and exudative phenomena appear.

#### ANGINA PECTORIS

The symptoms of angina pectoris are also extremely interesting. The pain in the upper portion of the chest on the left side and in the left arm is the best recognized of all symptoms because it overshadows all else. It is regularly expressed in the Ist, IIId and IIIId dorsal sensory nerves, on the left side. These arise from the first, second and third thoracic segments of the cord. The heart receives its sympathetic nerve supply from the left half of the upper five or six thoracic segments; the ventricle particularly from the

upper three. Since it is the natural thing for afferent impulses to be transferred to efferent nerves in the same segment which they enter, and on the same side of the body, the nerves arising from the upper thoracic segments and particularly those arising from the left half of these segments are the nerves which would be expected to express pain in case of heart lesions.

Sometimes, however, the pain is transferred upward into the neck, being expressed in the cervical sensory nerves and sometimes across to the right side of the body. All of this occurs, however, according to a definite law in physiology which governs the spread of reflexes upward or downward in the cord. This transference could probably occur either upward from the impulses which reach the cord in the upper thoracic segments or downward from those reaching the central nervous system in the medulla.

Spastic contraction of the muscles also occurs in angina, being produced through the motor nerves which correspond in origin to the sensory nerves which show pain.

There is also a reflex increase in respiratory effort, reflex effects in the gastrointestinal canal and reflex disturbance through the circulatory system, all of which follows regular paths over which physiologic impulses flow in conditions of health.

#### PULMONARY TUBERCULOSIS

The lungs offer an excellent opportunity to study reflex symptoms. They do not show pain like the hollow viscera such as the heart, stomach, intestine, gall-bladder, gall ducts and ureter, which have contraction as a part of their normal function; but by furnishing a large area which may be involved in the inflammatory processes, they furnish the ideal condition for originating many afferent impulses, particularly when infected with a widespread chronic inflammation such as is found in tuberculosis.

I have been able to suggest the paths for about forty reflexes from the lung, and have been able to prove most of them. The lungs being supplied by both the sympathetic system and the vagus of the parasympathetic system, and each of these systems having afferent neurons associated with them offer two distinct routes over which afferent impulses may travel; that over the sympathetic route goes to the upper five or six thoracic segments; and that over the vagus route to the medulla.

The afferent impulses which reach the central nervous system over the sympathetic route are transmitted up into the cervical segments of the cord, where they both mediate with motor and transfer their impulses



to sensory nerves going to the skin, subcutaneous tissue and muscles which arise from that region, particularly the third, fourth and fifth segments. These produce spasm of muscle, changes in sensation and degeneration of tissues. They likewise transfer impulse to sympathetic efferent neurons in the upper thoracic region which cause reflexes in the viscera.

The afferent impulses which course centralward with vagus are transferred in the medulla and midbrain to other cranial nerves, and produce widespread motor, secretory, trophic and sensory reflexes throughout the cranial region and in the viscera supplied by other branches of the vagus. Rasmussen and Larsell believe that the reflexes in the cervical portion of the cord also may be due to impulses transferred downward into the cord from the medulla. Through the vagus, such important structures as the larynx, heart and gastrointestinal tract, with the pancreas and liver, are affected.

The following four tables will show how widely spread the reflex effects from an organ may be and will serve as a paradigm for studying other viscera.

**TABLE I. PULMONARY REFLEXES IN SKELETAL STRUCTURES IN WHICH AFFERENT STIMULI COURSE CENTRALWARD OVER THE SYMPATHETICS AND EFFERENT OVER THE CERVICAL SPINAL NERVES PRINCIPALLY CIII, CIV AND CV.**

- I. Motor reflexes when the disease is active, as follows:
  1. Spastic contraction of the muscles of the shoulder girdle (sternocleidomastoideus, scaleni, pectorales, subclavius, trapezius, levator anguli scapulae, rhomboidei) and the crus and central tendon of the diaphragm.
  2. Limited motion of the half of the thorax, on which the diseased lung is found, through reflex spastic contraction of the sternocleidomastoideus, scaleni and subclavius above, and the crus and central tendon of the diaphragm below.
- II. Trophic reflexes when the disease becomes chronic, or has healed, as follows:
  1. Atrophy of the muscles of the shoulder girdle.
  2. Atrophy of the skin between the second rib angle of the jaw anteriorly; and the spine of the scapula and the base of the skull posteriorly.
  3. Atrophy of the subcutaneous tissue between the second rib and angle of the jaw anteriorly; and the spine of the scapula and the base of the skull posteriorly.
- III. Sensory reflexes as follows:
  1. Altered sensation, both superficial and deep, usually in the form of discomfort or aching rather than sharp pain; noted both when the disease is acute and chronic.
  2. Vasomotor phenomena producing flushing of the ear through the 3rd cervical sensory nerve, when the disease is active.

**TABLE II. PULMONARY REFLEXES IN SKELETAL STRUCTURES IN WHICH AFFERENT STIMULI COURSE CENTRALWARD OVER THE PARASYMPATHETICS (VAGUS) AND EFFERENT OVER THE VARIOUS CRANIAL NERVES.**

- I. Motor reflexes when the disease is active, as follows:
  1. Spasm of the sternocleidomastoideus and trapezius, through the spinal accessory. (Possibly spasm of all muscles of the shoulder girdle, through cervical nerves, as suggested by Rasmussen).
  2. Probably motor reflexes in the facial muscles through the facialis and trigeminus, since these atrophy when the process becomes chronic.
- II. Trophic reflexes when the disease becomes chronic or has healed, as follows:
  1. In the facial muscles through the facialis and trigeminus.
  2. In the tongue, causing atrophy and deviation toward affected side, through the hypoglossus and lingual.
- III. Sensory reflexes as follows:
  1. Headache, face ache, etc., through the sensory branches of the trigeminus, both when the disease is acute and chronic.
  2. Vasomotor phenomena producing flushing of the face, through the sensory fibers of the trigeminus when the disease is active.

**TABLE III. VISCERO-VISCERAL PULMONARY REFLEXES IN WHICH BOTH AFFERENT AND EFFERENT STIMULI COURSE OVER THE SYMPATHETICS**

- I. Motor and secretory visceral reflexes when the disease is active, such as:
  1. Dilatation of pupil.
  2. Inhibition of motor and secretory activity in gastrointestinal canal.
  3. Spasm of sphincters in gastrointestinal canal.
  4. Increased heart action (tachycardia.)
  5. Probably decreased motility and decreased secretory activity in ducts and glands of gall-bladder, liver and pancreas, although not readily proved.
- II. Probably trophic reflexes in structures subject to reflex action, when the disease is chronic or has healed.

**TABLE IV. VISCERO-VISCERAL PULMONARY REFLEXES IN WHICH BOTH AFFERENT AND EFFERENT STIMULI COURSE OVER THE PARASYMPATHETICS.**

- I. Motor and secretory visceral reflexes when the disease is active, such as:
  1. Increased secretion in the mucous glands of the nasal and naso-pharyngeal mucous membranes (catarrh) through the VIIth cranial nerve.
  2. Disturbances in the motility of the vocal cords through the superior and inferior laryngeal nerves,
  3. Probably motor reflexes in the lingual muscles through the hypoglossus since these atrophy when the disease becomes chronic.
  4. Slowing of heart through the vagus.
  5. Increased motility and increased secretory activity in gastro-intestinal canal through the gastric and intestinal fibers of the vagus, favoring appetite and digestion.
  6. Probably increased motility and increased secretory activity in the ducts and glands of liver, gall-bladder and pancreas, favoring digestion, although not readily proved.

7. Cough, the afferent impulse being carried over the vagus to a center from which afferent impulses go out producing action in the abductor muscles of the larynx over the inferior laryngeal nerve, and in all expiratory muscles through the various spinal nerves; and simultaneously producing inhibition of action in the adductor muscles of the larynx and the muscles of inspiration.

II. Trophic reflexes in structures subject to reflex action when the disease is chronic or has healed.

1. In the tissues of the nasopharynx through the facialis.
2. In larynx through superior and inferior laryngeal nerves.
3. Probably in heart, gastrointestinal tract, liver and pancreas, though not readily proved, through vagus.

III. Sensory phenomena.

1. Laryngeal irritation through the superior laryngeal nerve.

These examples will serve to show how reflex effects may be unraveled by the clinician if only he will bear in mind the paths through which the visceral nerves have the power to correlate activity in different organs and structures.

The endocrine glands also come into the picture and take part in producing definite and well recognized syndromes at times.

Symptoms may originate, or may be changed, when established, by alterations in the chemical control of the body. A disturbance in the normal products of the various glands of internal secretions causes certain syndromes which are at times so definite that they can be recognized with ease and have come to be recognized as the clinical picture of increased or decreased function. Aside from this, each organ or function which depends on a normal secretion of some gland for its stability is thrown out of its usual mode of reaction under endocrine dysfunction and so effects symptoms that may be expressed in states of disease.

#### SUMMARY

(1) Pathologic physiology must be studied as intensely as pathologic anatomy, if we are to understand the symptoms of clinical disease.

(2) The true value of symptoms may be assessed only by classifying them etiologically.

(3) The relationship of symptoms to the vegetative nervous system is discussed.

(4) An etiologic classification of symptoms is offered for infectious diseases involving important organs, as follows:

(a) Group I. **Toxic symptoms** which are expressed generally throughout the body, but particularly throughout the sympathico-adrenal system.

(b) Group II. **Reflex symptoms** which are produced by irritation of afferent nerves supplying a given organ which carry the impulse centralward and transmit it to some efferent neuron for action.

(c) Group III. **Local symptoms** produced by the inflammatory condition in the organ itself.

(5) The etiologic classification of the symptoms which present in a few widely different clinical conditions is discussed.

(a) Symptoms appearing with changes in blood sugar level.

(b) Symptoms accompanying toxemia.

(c) Symptoms accompanying acute abscess of teeth.

(d) Reflex effects from angina pectoris.

(e) Reflex effects from pulmonary tuberculosis.

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## DIAGNOSIS OF TUBERCULOSIS IN CHILDREN

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(Address of the fraternal delegate from Texas, to the Arizona State Medical Association, at their Thirty-ninth annual meeting, in Phoenix, April 24 to 26, 1930). •

Diagnosis of tuberculosis in children is, to my mind, extremely important for three reasons: (1) to enable the condition to be controlled in order that the child may not be destroyed or maimed, (2) to protect other children from over-exposure to the disease, and (3) as a means of approach to check adults and other members of the family, to find the sources of infection. And diagnosis of the childhood condition is by no means easy, since we find so many cases in which there are no manifest symptoms when the disease is far advanced, and, on the other hand, other cases which have several noticeable symptoms but are entirely devoid of apparent physical signs. Our problem has developed almost far enough to cause us to consider every child infected unless we can prove otherwise, especially if there is a case of adult tuberculosis in the family.

H. W. Hetherington (American Review of Tuberculosis, 1927) reports tuberculin tests on 1999 school children and finds that about seventy-two percent of them reacted positively. Their age range was from five to sixteen years and he found that reactors increased in numbers with the age, 35.5 percent at five years of age to 93.2 percent at fifteen years of age. To my mind, this means nothing more than that children in the cities and in school are constantly exposed, and the longer they are exposed the more likely they are to contract the disease.

It is rather hard for us to imagine that thirty-five percent of the five-year-old children whom we see are diseased; or seventy-five of the ten-year-olds; or ninety-three percent of the fifteen-year-olds; but such is the case. True, only a small percentage of these later develop the disease further and are destroyed by it; but for the reasons named we should be more careful in our examinations and try to diagnose the condition early enough to enable us to come nearer the goal of obliterating the disease entirely.

In recent years so much attention has been given to food and milk production that only a small percentage of infection can be laid to these as sources. By far the largest percentage of infections come through the respiratory tract from an open case in the family. For this reason I say that all children in a family where there is an open case of tu-

berculosis should be treated as if they were infected, whether there are symptoms or signs, or neither.

The usual type of tuberculosis found in children is termed the childhood type and differs materially from the adult type. It starts, in most cases, with a formation within the parenchyma near the periphery in any part of the lung, of one or more tuberculous nodules with caseation in the center. In the favorable cases, usually in older children, these nodules become encapsulated and remain small, but in others there is a peripheral spread and involvement of more of the lung tissue. In the favorable cases there is a later deposit of calcium in the nodule coincident with the encapsulation. While this is going on, there is a drainage to the tracheobronchial nodes and these become infected in varying degrees. There may be single or massive infection of these nodes, which may break down entirely but, in favorable cases, become calcified.

In the adult type, which may be found in children but always with a grave prognosis, the infection is secondary, exogenous or endogenous, and almost always starting at the apices. The tracheobronchial glands are rarely infected in this type, and caseation is, in most cases, followed by cavities instead of calcification.

The diagnosis of tuberculosis in children depends on a number of factors, of which the most important are: (1) history; (2) symptoms; (3) physical signs; (4) laboratory tests, such as x-ray, tuberculin, complement fixation, etc.; and the most important of these is history. The physician should carefully question the child or his parent to find out whether or not there is a case of adult tuberculosis in the household. Henry D. Chadwick, in a report of examination of 25,000 Massachusetts school children, found that four times as many cases of childhood type and twice as many cases of adult type were found in children said to have been exposed to a case of pulmonary tuberculosis, as among children not exposed. In so many cases where the history of an open case in the family is denied, a careful study and questioning will reveal a case who has had chronic bronchitis for years. Usually these cases turn out to be fibroid phthisis and constant exposure is taking place. Not always do we find that a few exposures to an open case will cause the disease in childhood, but constant, close contact will, without doubt, cause the childhood manifest type, and in many cases the adult type. Infection is probable in the schools through teachers, where the city health board is lax in its examina-

tions, and also where the supervision of childhood health is not thorough and there are open cases without severe, manifest symptoms in one or more children.

By no means should the production of food and dairy products be overlooked as a source of infection, especially in the smaller towns where the dairies are not under close supervision of the city or county health boards. Due to the prevalence of tuberculosis in cattle, the children should be safeguarded from the bovine type by being fed only pasteurized milk. Special care should be taken to investigate the cook and nurse of the child to see that the food is not contaminated at this source.

Symptoms may be many and varied, or entirely lacking. In some children we may find the childhood type without any symptoms that can be ascribed to the disease, even though the disease is progressive at the time. Tuberculous infection should be looked for in the child who is slightly hoarse, has frequent colds and sore throat and cough, especially if the cough is productive. In children, frequent upper respiratory infection is of much more significance than in adults. The weight question does not play such an important role, since childhood tuberculosis is almost as prevalent in overweight as in the underweight child; and we readily see by this that, if we examine only the underweight children, we shall miss a great many cases.

The child who tires easily and loses his natural inclination to play with other children, should be watched closely. I am always suspicious of the child prodigy who is extremely bright and leads his class in school, often being a grade or two ahead of the other children his own age. In many cases we learn that he spends very little of his time out of doors and much of it with his books because he is too tired to play. I believe, also, that a small amount of absorption from tuberculosis is a mild, mental stimulant, enabling the child more quickly to grasp his problems and learn his lessons.

An occasional rise in temperature to 99.5° or 100° cannot be taken as an evidence of disease. The normal temperature range in children is much more variable than in adults, and any active exercise or close confinement in a warm room will bring about an increase in temperature of one to one and one-half degrees. However a persistent daily rise to 99.5° or 100° is sufficient cause to make necessary a careful search for disease. Often a sudden rise in temperature which lasts for a few days and then subsides is caused by a pleuritic effusion. Physical

examination and roentgenograms can confirm the diagnosis, and unless some other cause is evident, pleural tuberculosis should be considered as the source.

Only a few of the phases of childhood tuberculosis can be detected by physical examination. Enlarged and matted cervical glands should be considered as evidence, but glands which are simply palpable can be ignored. Tracheobronchial gland enlargement can rarely be detected by percussion, which is also the case with the small pulmonary nodule. Auscultation and percussion are of service only in detecting the diffuse infiltrations in the lung.

The tuberculin skin test is by far our most reliable source of information in detecting tuberculous infection. A positive reaction always means that the infection is present even though it does not indicate whether the disease is progressive or latent. There are two methods in general use; the Pirquet method, which consists of scarifying the skin and allowing the tuberculin to absorb; and the Mantoux, or intracutaneous method. The latter is more accurate and a greater number of reactors will be found if it is used. A negative skin reaction with as high as 1.0 mg. of tuberculin, unless in the presence of one of the severe exanthemata, means absence of infection.

The complement fixation test is of doubtful value, but Dr. George Turner, of El Paso, is doing an extensive amount of work on it at present in connection with his experiments in deproteinizing blood serum, and it is to be hoped that his work will be of value to us in diagnosing early tuberculosis.

Every child who reacts positively to tuberculin should have a chest roentgenogram. In only a comparatively few cases will childhood tuberculosis be evident on a film, but no diagnosis can be complete without a careful x-ray study. Diffuse infiltration will show in any part of the lung and have the appearance of tuberculous broncho-pneumonia. As these areas are re-absorbed, there remain only small calcified nodules or strands which may in turn disappear at a later date. Tracheobronchial node infection is more or less evident, depending upon the amount of calcification which has taken place. The enlarged glands in which there is no calcification cannot be differentiated from the surrounding tissues, and a diagnosis can be made from them only when the increase in size is enough to cause them to protrude as rounded masses beyond the hilus. In some cases, if the picture is made with the right side of the patient turned slightly away from the film, these glands



will be brought out more clearly. Blood vessels caught in cross-section and bronchi are sometimes mistaken for enlarged nodes.

The parenchymal lesions have to be differentiated from such pulmonary conditions as lung abscess, bronchopneumonia, and bronchiectasis. In abscess there is usually the history of a recent upper respiratory operation, or the possibility of a foreign body, to be considered. Broncho-pneumonia has a history of an acute illness, and the lung density following it clears rapidly. Bronchiectasis has, in nearly every case, broncho-pneumonia as a forerunner, and we find the symptoms of the latter all disappearing except the persistent cough and sputum. Tracheo-bronchial infection may be confused with Hodgkin's neoplasms, or enlarged thymus, but usually a careful study or angle picture will clear these up.

In conclusion, I wish to present the plan in use in the schools in Massachusetts to find the cases of tuberculosis in children which should be under observation and treatment. It is, I think, the most thorough and, at the same time, most economic plan I have come in contact with for discovering tuberculosis in groups of supervised children. Every school child is subjected to tuberculin test and at the end of five days the readings are completed. All non-reactors are dismissed and the reactors then have x-rays made. All cases who do not show any abnormal shadows in the film are dismissed and the others are brought in for a careful physical examination. This plan is effective in that it locates all cases of tuberculosis so that they can be observed and given a bit more care, and also differentiates the cases needing only observation from the ones needing closer observation and treatment. Another good point to recommend it is the fact that the examining personnel can be small.

## ESOPHAGEAL DIVERTICULA

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(Read, by invitation, before the thirty-ninth annual meeting of the Arizona State Medical Association, held at Phoenix, April 24 to 25, 1930.)

Esophageal diverticula, while probably not occurring any more frequently than formerly, due to a better understanding of this condition by the profession, are being diagnosed more frequently.

In 1840 Rokitsky<sup>1</sup> classified esophageal diverticula into two types, the traction and the pulsion type. This classification is still used. In 1881. Zenker and Ziemssen<sup>2</sup> described the condition known as Zenker's pharyngo-esophageal diverticulum. Oeke-

nomides<sup>3</sup>, in 1882, added the traction-pulsion variety.

Traction diverticula usually occur in the thoracic portion of the esophagus. They are caused by cicatricial contraction of a chronic inflammatory process drawing the wall of the esophagus outward and include the whole wall of the esophagus. The apex of the pouch is usually higher than its point of entrance into the esophagus and, therefore, it rarely attains any appreciable size or produces any symptoms. Occasionally food particles may lodge in the pouch. The sac then enlarges, due to pressure from within, and in this manner a traction-pulsion diverticulum is formed. Judd<sup>4</sup> estimates that this occurs in about seven percent of traction diverticula. He reports two personal cases. Case No. 1 of this series also belongs to the traction-pulsion type.

Pulsion diverticulum usually occurs in elderly people, mostly men, and always occurs in the cervical region. The point of origin is fairly constant, directly back of the cricoid cartilage on the posterior wall of the esophagus, at its juncture with the pharynx. At this point, where the oblique muscles of the pharynx and the transverse circular muscles of the esophagus meet, there is a small triangular area not covered by muscle. This area has been described by many writers as the Lannier Hackerman area.

Bevan<sup>5</sup> believes that a predisposition to the development of diverticulum may occur as the result of more than normal weakness at this point, possibly due to a congenital absence of muscle fibers over a large area. Judd, in reviewing his cases, could find no clue to the etiology other than weakness in the wall of the upper end of the esophagus. There had been no history of trauma or any evidence of anything unusual in mastication or deglutition. Jackson<sup>6</sup> believes that the chief factor in the etiology of esophageal diverticulum is the pinch-cock action of the cricopharyngeus muscle. Normally the pinch-cock is always closed except when it momentarily opens upon the approach of food or water. When it fails to open, a tremendous pressure is exerted on the pharyngeal walls, which causes pouching at the weak point. He recommends gently stretching the cricopharyngeal constriction, even when not organically strictured, to lessen the tendency to recurrence of the diverticulum, and to prevent post-operative leakage.

Morley<sup>7</sup> states that there is no evidence of a congenital origin and states that we can only assume that, for some unknown reason, the circular fibers at the upper end of the esophagus fail to relax in the process of de-

glutition. Durr<sup>8</sup> reports that half of his cases of pulsion diverticulum were associated with goiter. Von Hofmeister<sup>9</sup> also reports that in a series of nine cases, five had retrosternal goiters. Bull<sup>10</sup> reports that diverticulum of the esophagus has been observed in association with idiopathic dilatations of the esophagus.

Whatever may be the etiologic factor, once the esophageal muscles have been penetrated the sac gradually enlarges. At first the pouch is in mid-line growing down behind the esophagus, gradually increasing, usually into the left side of the neck. In this series of ten cases, the pouch presented in the right side of the neck four times. As the sac gets larger it frequently grows into the mediastinum, becoming intrathoracic. The walls of the sacs are very thin and are composed of a layer of mucous membrane and fibrous tissue. Judd has called attention to the fact that, while occasionally there may be a band of muscle fibers extending across the sac, muscle tissue is not a part of the sac wall.

The inception is probably rarely recognized, as the sac has to attain some size before it will give trouble in swallowing. Dysphagia and regurgitation of food are usually the first symptoms. Later, gurgling noises in the throat and cough are complained of. As the sac increases in size, dysphagia is more marked, resulting in loss of weight.

The diagnosis is not difficult. No complicated tests are necessary. Given a patient with a history of dysphagia and regurgitation of food, the first thing to order is a barium meal examination. The x-ray will always reveal the sac if the condition is due to a pulsion diverticulum. The x-ray will also determine in which side of the neck the sac presents. In the patients with a large sac, one can usually see one side of the neck enlarging as the patient drinks water and, by making pressure over this area, the fluid can be made to regurgitate back into the mouth. The diagnosis is never complete without an esophagoscopic examination, for this will demonstrate or rule out other pathological conditions of the esophagus, such as organic strictures or carcinoma below the diverticulum.

The treatment of pulsion diverticulum is surgical, even in cases with small sacs which cause but little trouble. For at this time the patient's general condition is excellent. As time goes on the tendency is for the sac to increase in size, causing marked deformity of the esophagus. The result is an increase of dysphagia and regurgitation of food, re-

sulting in a marked loss of weight and a patient who is a poor surgical risk.

Patients formerly came for treatment in a starved condition, and many required a preliminary gastrostomy for forced feeding. Fortunately, at present this is rarely necessary and in many cases the condition is recognized so early and the condition of the patient so good that no preliminary measures are necessary.

In patients who are in fair physical condition it is my custom to hospitalize the cases for a few days and force fluids both subcutaneously and per rectum. On the day preceding the operation, the patient is given intravenously 1000 c.c. of ten per cent solution of glucose. A duodenal catheter can frequently be passed through the nose, down the esophagus, into the stomach and feeding given through the catheter, which may be left in place from seven to fifteen days. When the sac is very large, it is almost impossible to pass a catheter into the esophagus. In this type of case Vinson<sup>11</sup> suggests having the patient swallow a thread and, using this as a guide, to pass the catheter as described by H. S. Plummer<sup>12</sup>. The catheter can be removed daily but not the thread.

All patients should be instructed to keep the sac empty for several days before the operation. This can easily be done by drinking several glasses of water soon after eating, thereby washing out the sac.

Many different methods have been used to treat this condition. Bell, in 1830, recommended an external fistula. Konig recommended elevating the sac and fixing its fundus to the hyoid bone. Wildenberg, in seven cases, changed the direction of the sacs, later removing three of them. Liebel fixed the sac to the skin incision, leaving it unopened. Von Beck recommended ligating the neck of the sac and leaving it to slough out of the packed wound. He reported two deaths from pneumonia in seven cases. Goldman reported, by Von Beck's method, sixty-five per cent of fistulas with infection and slow healing. Niehaus probably made the first extirpation. Girard<sup>13</sup> in 1896, invaginated the sac and sutured the esophageal walls. Havan<sup>14</sup>, elaborating this procedure, invaginated by suture and recommends in large sacs to remove a portion before invaginating. Murphy recommended delivering the sac unopened through the incision, twisting it, later amputating and closing the fistula. By this method many sacs became gangrenous, due to the interference to the circulation. C. H. Mayo<sup>15</sup> suggested sewing the sack, untwisted, to the sterno-mastoid, leaving it in this position for ten days, later amputating and closing the



opening in the esophagus. This is the method used today.

At present the operation is very well standardized. The only controversy existing is whether the operation should be completed in one stage, that is, freeing and excising the sac in one operation, or doing a two-stage operation, freeing the sac and suturing it unopened in the wound, with excision about ten days later.

Jackson<sup>17</sup>, Shallow and Gaub<sup>18</sup>, believe that the one-stage operation, with the aid of the esophagoscope and the use of the Rehfus tube post-operatively, is safer and gives much better results.

In cases with small sacs, surgeons have a choice. In this type of case the one-stage operation is excellent, but in large sacs extending into the mediastinum, with patients in poor physical condition, one has no choice—the two-stage operation is the only one to use.

The early operations for removal of diverticula were attended by high mortality. This mortality was due to infection in the neck, which usually extended down into the mediastinum. In the two-stage operation there is usually an interval of about ten days between the first and second operation. During this time the mediastinal space becomes closed by granulation tissue. This minimizes the danger of mediastinitis. Another advantage is that, by changing the position of the sac, it is no longer in direct line of the descent of food and patients are able to swallow without difficulty. Patients can usually be out of bed.

The operation should be performed, if possible, under local anesthesia, usually one per cent novocain. The sacs in many cases, especially if small, are very difficult to locate. A conscious patient is told to swallow and this causes a bulging of the sac which greatly aids in its location.

Whether one performs the one or two-stage operation, the technic of freeing the sac is the same, viz: The skin incision, including the platysma, is made along the anterior border of the sterno-mastoid from just above the level of the cricoid cartilage down to the clavicle. The sternomastoid is retracted outward and the deep cervical fascia is divided parallel with the skin incision. The large vessels of the neck are retracted outward and the sterno-hyoid muscle is retracted inward. The middle thyroid vein, if present, is ligated before any attempt is made to expose the thyroid gland.

The omohyoid muscle should be divided if it interferes with good exposure. The thyroid gland is rotated inward; this exposes

the upper part of the trachea at its junction with the thyroid cartilage. Behind this may be seen the esophagus as a flat fold pressed against the vertebra. If the sac is small it will be behind the esophagus, slightly to the left of midline, just below the level of the cricoid cartilage. If large, it is very easily recognized. If local anesthesia is used, the patient is asked to swallow, the sac can be seen bulging out of the lower portion of the neck. Jackson has suggested a very ingenious method of localizing the sac. During the operation he inserts a small endoscope into the sac, the illumination from within guiding the surgeon.

The sac, when located, can usually be freed from the surrounding structures with blunt dissection. Some few firm adhesions may have to be cut. Great care should be taken not to perforate the sac. As soon as the sac is delivered from its position in the chest, the cavity should be packed with a warm sponge to protect the mediastinum from accidental leakage. One point of importance in the dissection is the danger of injuring the sac at its juncture with the esophagus. If the sac has a narrow neck, it is easy to differentiate between the esophagus and the diverticulum. However, if it has a wide opening into the esophagus, as is common, there is great danger of opening the sac or injuring the esophagus, depending on whether a one or two-stage operation is to be performed. The one-stage operation as performed by Gaub, Jackson and Shallow, is as follows: The neck of the sac, as in inguinal hernia, is transfixed with a fine needle and No. 1 iodized catgut. The sac is then cut away. Three interrupted sutures are now placed, each suture picking up the muscular coat of the esophagus. These sutures cause inversion of the stump. The esophagoscope being in situ during the operation, there is no danger in narrowing the lumen of the esophagus too much. An incision in the neck is closed in layers. A small piece of cello silk is placed beneath the deep fascia. The Rehfus tube is passed through the nose into the stomach and retained for from ten to eighteen days. This affords rest to the esophagus.

The two-stage operation as performed by C. H. Mayo, Judd and Lahey<sup>19</sup>, is as follows: After freeing the sac from the surrounding structures and down to the esophagus, the sac is sewed to the sterno-mastoid or the platysma with a few catgut sutures. In doing this, great care should be taken not to pull out the sac too far, so that the esophagus will not be pulled out of normal position. Also, in sewing the sac to the muscle, some

sacs are so thin there is danger of penetrating the sac and causing a leak with secondary infection of the tissues of the neck. The wound in the neck is sewed around the sac and the entire sac allowed to prolapse from the wound.

The sac is left in this position from eight to twelve days, depending upon its size, at which time the second operation is performed. The tissues around the neck of the sac are injected with one per cent novocain solution. The neck of the sac is again freed, either a purse string or a transfixing suture is used to tie it off, and the sac excised. A few interrupted sutures are used to reinforce the esophagus. A small fistula usually forms although it heals completely in a short time.

#### CONCLUSIONS.

1. The most important etiological factor in the production of pulsion diverticulum is the incoordination of the cricopharyngeal muscle, plus weakness of posterior muscles.
2. All patients, especially elderly people, complaining of dysphagia or regurgitation of food should have a barium meal examination.
3. Patients with diverticulum of the esophagus should be carefully examined with the esophagoscope.
4. Gastrostomy is rarely indicated, since forced feeding can be carried out by means of the duodenal catheter.
5. The two-stage operation is the safer procedure since it eliminates the danger of mediastinitis.
6. Local anesthesia is preferred.
7. In this series of eleven cases, nine males and two females, the average age was sixty-six.
8. There were no fatalities nor recurrences.

#### CASE NO. 1.

Female, H. W., age seventy-five, seen in consultation with Dr. Harold Smith. Chief complaint: loss of appetite and increasing constipation. Bronchial cough for four weeks. Always enjoyed good health until last eight years during which she has gradually grown weaker. Physical signs of diffuse bronchitis.

X-ray examination: shows a fairly good-sized diverticulum. Its lower border is about 10 cm. below the upper level of the arch of the aorta or 16 cm. below the upper border of sternum. The opening into esophagus about 3 cm. in width from above down, pouch itself extending one cm. above and below and 3 cm. deep. Posteroanterior stereoradiographs of the chest, made erect, show small chest, diaphragms which do not move freely. There is a calcification within the arch of the aorta. There is some thickening of the lung roots with marked prominence of the descending branches, and some thickening in each hilus, particularly notable in the oblique views from the fluoroscope.

No esophagoscopy examinations made.

Diagnosis: Traction pulsion diverticulum.

No treatment, as patient has no symptoms refer-

able to the diverticulum. Dye series of gallbladder shows stones.

#### CASE NO. 2.

Male, F. S., age fifty-eight. Chief complaint: choking sensation and difficulty in swallowing, started seven years ago. At first trouble was intermittent, lately continuous. Has almost a constant desire to swallow and complains of gurgling noises in the throat. Has lost forty-eight pounds, mostly during the last two years. Otherwise examination negative.

X-ray examination: shows a large diverticulum of the esophagus, presenting in the left side of neck. Esophagoscopy examination negative for other pathology.

Preliminary treatment: Unable to pass a duodenal catheter into stomach due to large sac but succeeded in having patient swallow thread. Catheter passed over thread and forced fed for ten days.

Operation: local anesthetic one per cent novocain. Two-stage operation performed. A sinus persisted for two weeks. At present, four years since operation, perfectly well. Has gained fifty pounds.

#### CASE NO. 3

Male, D. O., age sixty-eight. Chief complaint: Difficulty in swallowing and regurgitation of food. Started six years ago, much worse last six months. Complaints of gurgling noises in throat after eating. Lost only five pounds.

X-ray examination: shows a small diverticulum of the esophagus, sac practically in mid-line. Esophagoscopy examination was negative for other pathology.

No preliminary treatment, general condition excellent.

Operation: Anesthetic, nitrous oxide with oxygen. Two-stage operation performed. Sinus completely healed in four days. Three and one-half years since operation, no symptoms.

#### CASE NO. 4

Male, H. B., age sixty-two. Chief complaint: Difficulty in swallowing all kinds of food. Regurgitation and vomiting. Trouble started fifteen years ago. Has gurgling noises in throat after eating, also a troublesome cough. Has lost twenty pounds. Right side of neck bulged when patient drank water, sac held twelve ounces.

X-ray examination shows a large diverticular sac presenting in the right side of neck. Esophagoscopy examination by Dr. Jesberg was negative for other pathology of the esophagus. Five years previous an operation had been performed for the removal of the diverticulum, which was not successful. He had a discharging sinus for seven months. As soon as the sinus healed all of his symptoms returned.

Preliminary treatment: Fluids were forced for two days and 1000 c.c. of a ten per cent glucose solution was given intravenously day preceding operation.

Operation: Anesthetic, nitrous oxide and oxygen. Two-stage operation performed. Adhesions of sac very dense, due to previous operation. Sinus lasted three weeks. Three years since operation, no recurrence of any symptoms.

#### CASE NO. 5

Male, T. T., age seventy-four. Referred by Dr. John Barrow. Chief complaint: difficulty in swallowing. Had sour regurgitation but no vomiting. If he stooped over after eating, food ran out of nose. Has gurgling noises in throat after eating. Trouble started one year ago. Has had a severe cough for the last five years. Prostatectomy two years ago, history otherwise negative.

X-ray examination: shows a small diverticulum of



the esophagus presenting in the right side of the neck. Esophagoscopy examination by Dr. Jesberg revealed no other pathology. No preliminary treatment.

Operation: Local anesthetic one-half of one percent novocain. Two-stage operation. Good recovery. Sinus lasted five weeks. Very troublesome cough which might account for sinus remaining open so long. Eleven months since operation, no return of symptoms.

#### CASE NO. 6

Male, J. W., age seventy-two. Referred by Dr. J. Mark Lacey. Chief complaint: Ten years ago had difficulty in swallowing, feels as if food stopped in middle of chest and relieved only after a severe coughing spell. Last two years had regurgitation of food and vomiting, also gurgling noises in throat after eating. Blood pressure 225/140. Prostatectomy ten years ago, otherwise history negative.

X-ray examination: shows medium sized sac presenting on the left side of the esophagus. An esophagoscopy examination by Dr. Jesberg was negative. No preliminary treatment used.

Operation: Local anesthetic one-half of one percent novocain. Sac extremely thin, which ruptured during the dissection, frothy mucus escaped. Wound thoroughly irrigated with Ringer's solution. Sac then removed in one-stage Gaub Jackson technic. Small rubber tissue drain inserted into lower angle of wound. Patient unable to tolerate duodenal tube for more than three days, after which swallowed without difficulty. No sinus developed in spite of a very severe infection of the neck. This infection cleared up in two weeks. One year after operation, completely well.

#### CASE NO. 7

Male, E.M.L., age sixty-eight. Chief complaint: Regurgitation of food and vomiting. Started two years ago. Condition had gradually become worse. General health excellent. Previous history shows nothing bearing on present trouble.

X-ray examination: shows a medium-sized sac presenting in left side of neck. No other pathology of esophagus found.

Operation: Local anesthetic, one percent novocain. Two-stage operation. No sinus developed. Patient at present completely relieved of all symptoms (six months after operation).

#### CASE NO. 8

Female, Mrs. C.F.S., age forty-seven. Chief complaint: Dysphagia, spitting up of food, noise in throat, coughing and constipation. These symptoms started seven years ago. First noticed gurgling noises in throat while eating. Symptoms have increased until the present. Now she is very weak, gets very little food into stomach. Has lost fifty-one pounds. Blood sugar 62 mg. per 100 c.c. of blood. Examination otherwise negative.

X-ray examination: Shows a large diverticulum of the esophagus presenting in the right side of the neck. Esophagoscopy examination negative for other pathology.

Preliminary treatment: Patient hospitalized for four days. Was given salt solution subcutaneously and five per cent glucose solution per rectum and the day before the operation 1000 c.c. of ten percent glucose solution was given intravenously.

Operation: Local anesthetic, one per cent novocain. Sac was very adherent and extremely thin so that we were unable to do a two-stage operation as, in the attempt to sew the sac to the muscle, the stitches tore the sac. The one-stage operation was then done. The duodenal tube was immediately inserted and patient fed in this way for about fifteen days. At the end of seven days patient was able

to swallow a small amount of liquids without difficulty so that at present no difficulty at all. Moderate drainage from wound for ten days which gradually healed up. Small sinus for four days.

#### CASE NO. 9

Male, J.H., age sixty-two. Chief complaint: Difficulty in swallowing, regurgitation of food, choking sensation and cough. Symptoms first noticed thirteen years ago; while eating some berries, noticed he could not completely swallow them. Then noticed difficulty in swallowing and regurgitation; could not swallow solid food such as bread, cheese, apples, etc. They all caused itching and choking sensation. Loss of weight was not marked, twenty-two pounds in ten years. Previous history negative. Urine negative. Blood: Hemoglobin: 81 per cent, R.B.C. 4,752,000. Color index. .8 per cent. Leukocytes 9,000; polys, 66 percent; lymphocytes, 30 percent.

X-ray examination: Showed a large diverticulum lying posterior to the esophagus. It apparently comes off about on a level with the sixth cervical. It is oval in shape and fills before any of the meal goes into the distal portion of the esophagus. In size is approximately four centimeters broad and nearly eight long, and is in the center line. No preliminary treatment.

Operation: First stage under one percent novocain, local anesthetic. Sac was freed and sewed to the sternocleidomastoid muscle. Practically all of the sac was in the mediastinal cavity. Quite adherent to the upper part of the under surface of the thyroid. There was a small plexus of veins covering the sac, which had to be ligated. Patient did very well, was out of bed on the second day, able to take soft foods without any difficulty and all the liquids we wanted him to take. Second stage of operation was done eleven days later. The sac was freed down to the esophagus and transfixed with a suture, and three sutures of chromic catgut used to invert the stump of the sac into the esophagus. Post operative course was entirely satisfactory. Patient had no leakage whatever.

Patient was re-checked April 3, 1930, is in perfect health, working every day, absolutely no recurrence of any symptoms.

#### CASE NO. 10

Female, Mrs. F. B., age sixty-five. Chief complaint: Dysphagia, regurgitation, great loss of weight, swelling in left side of the neck, constipation, fatigue. Symptoms first noticed twenty-five years ago. Patient vomited quite suddenly some of the food, only part of the food would be regurgitated, and only after eating several times in a row would she get enough food to satisfy the appetite. Would eat as many as eight and ten meals a day. Type of food made no difference, liquids came back just as quickly as solid foods. All signs and symptoms have become accentuated in the last year. Recently, during the past twelve weeks, patient has hovered near death due to starvation and general debility. For several weeks was in the Hollywood Hospital, getting fluids by skin, vein and rectum. Has greatly improved.

X-ray examination: Patient was given a barium meal but only a small portion was seen to trickle down into the lower esophagus. The greater portion of the barium passed into a large, pear shaped sac lying behind the upper part of the sternum and extending over to the right side of the chest.

Preliminary treatment: Patient was kept in the hospital about five days before operation. During which time she received, daily, glucose intravenously and about one quart of salt solution rectally or subcutaneously. This improved the patient very materially.

Patient is an elderly woman lying in bed very emaciated. Takes very little interest in her surroundings. All the great vessels of the neck and face are somewhat distended when not swallowing food or liquid and when she drinks about sixteen to twenty ounces, the veins over the left eye, left cheek, left cervical region and all down the left arm distend very greatly, and are very varicose. Varicosities also show up when the patient does not swallow. The patient, on the left side of the face, when the sac is full, looks like a patient who is choking to death, especially the left eye seems to bulge out.

Operation: First stage, local anesthetic, one percent novocain. Sac was freed, sewed to the sternomastoid muscle and skin, and left outside of the neck. Practically all of the sac was in the mediastinum. The sac was very large, the walls were very thick, and there was a layer of muscle over the anterior wall of the sac. Under the thyroid, near the neck of the sac, was a plexus of veins. The sac was densely adherent to the vertebral fascia.

Following this operation the patient was able to swallow liquids and soft foods. The sac was very large, and three days later it became distended with air, causing the patient considerable pain. It had to be opened with a pin-point electric cautery, allowing the air to escape and the sac flattened out.

Things went along fairly well for about seven days, and then the patient developed a very severe ulcerated stomatitis, which prevented her from taking any liquids whatever.

Due to the patient's poor physical condition it became necessary to do either a gastrostomy, or some other type of forced feeding. I decided to cut off the sac, leaving about an inch protruding from the skin edges, and through this a catheter was inserted into the esophagus, and the patient was fed in this way without any difficulty. This was kept up for about eight weeks. The stomatitis cleared up after about three weeks. Patient then started taking a little food and liquids by mouth, but we kept up the forced feedings.

She gained in weight and her general condition improved. In the mediastinal area from where the sac was removed,—due no doubt to the number of attacks of inflammation, thickness of the sac wall and adhesions, and the length of time the sac was present,—a cavity remained, which would fill up with mucus and pus, and cause the patient a great amount of trouble and a cough. For this condition we inserted a catheter, and connected it with a continuous suction apparatus, and thus kept the cavity empty; we also irrigated it with Dakin's solution. This eventually cleared up after about eight weeks, and the patient was able to take food. We were then able to do the second stage of the operation, using Lahey's method of dissecting the mucous membrane down to the esophagus, leaving the outside fibrous layer. This sinus was packed daily and kept clean. Our reason for doing this was due to the fact that the walls of the sac were at least one-quarter inch thick, and it would have been impossible to invert the neck of the sac into the esophagus.

The patient left the hospital on the tenth week in fair condition considering the fact that she was brought into the hospital in a morbid and starving condition.

Three months after the operation, the patient developed a broncho-pneumonia and lung abscess from which she died, but all during her illness she was able to take food and medicine by mouth, and had very little difficulty in swallowing.

#### CASE NO. 11

Male, C.H.F., age forty-nine. Chief complaint: Regurgitation of food, difficulty in swallowing and

cough. About three or four years ago patient felt as if a pocket had been left in the throat following a tonsillectomy. He consulted an ear, nose and throat specialist who found the throat in good condition. At this time patient occasionally regurgitated a small amount of food. Condition has gradually gotten worse, and at present he regurgitates after every meal two to three tablespoonfuls. Difficulty in swallowing started a year ago. After meals, coughs and regurgitates. For twenty-seven years patient has had severe headaches, also told at one time that he had a duodenal ulcer (1921). Has lost just a few pounds in weight. General appearance is that of good health, otherwise physical examination was negative. Blood pressure, 120/70.

X-ray examination: Shows a fairly large diverticulum that lies almost in the center line, and when fairly well filled is probably two centimeters in anteroposterior depth, and four in width from side to side, and probably six from top to bottom. It is of smooth outline, definitely posterior to the esophagus, and barium can be seen spilling into the lower portion of the esophagus from a point near its top. No other pathology in the esophagus. Urine: Negative. Blood: Hemoglobin, 80 percent; red blood cells, 4,185,000; leukocytes, 11,000; polys, 73 percent; lymphocytes, 25 percent. Patient's general condition was excellent, and no preliminary treatment was necessary.

Operation: December 16, 1929. First stage, local anesthetic, one percent novocain. The sac was freed, and was sewed to the sterno-hyoid muscle in the upper part of the wound, so that the base of the sac was a little higher than the opening in the esophagus. Wound was closed, and a rubber tissue drain inserted at the lower angle of the wound.

Patient made a very good recovery from the first operation, and was able to swallow without any difficulty the same day. He was out of bed on the third day, taking soft food.

Eight days later, December 24, 1929, the second stage of the operation was done. The sac was freed down to the esophagus and was removed by means of a transfixation suture, and several sutures into the esophagus to reinforce the opening.

Patient recovered very nicely from the second operation. Was kept without food for forty-eight hours, given glucose and saline intravenously twice, and then was started on liquids. In a week's time he was taking soft foods without any difficulty. There was no leakage at any time from the suture line in the esophagus.

This patient was rechecked on April 2, 1930, and has had no difficulty in swallowing, nor any regurgitation, and his cough has entirely disappeared.

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FURTHER STUDIES IN TREATMENT OF  
FOOD SENSITIZATION WITH DI-  
GESTANTS AND CITRIC ACID

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(Read before the Association for the Study of  
Allergy, Portland, Oregon, July 8, 1929).

My results in the treatment of sensitiza-  
tion phenomena by digestants have been so  
gratifying that I again call attention to  
them.

An article on the subject before the So-  
ciety a year ago, included a theory to ex-  
plain sensitization which now I wish to sim-  
plify. An understanding of the theory I be-  
lieve to be of value, because it fits many of  
the facts and has helped me to develop meth-  
ods of treatment and to understand many of  
the phenomena which I have observed.

Briefly, the history is that whole protein  
gets into the blood stream and tissues of the  
body and is digested by an enzyme to two  
simpler compounds. One, only, of the two,  
is toxic. The toxin is further digested by a  
second enzyme. An addition which I now  
make to the theory is that there may be a  
third or even a fourth enzyme concerned in  
the digestion before all the products become  
nontoxic. The first enzyme I designate "P",  
protein enzyme, and the second "T", toxin  
enzyme. There also may be toxin enzyme  
two, "T"2, and even three, "T"3; enzyme  
"P" may be identical for two or more pro-  
teins—nonspecific—whereas "T" is probably  
specific for each toxin. It is possible also  
that the toxin stage of the protein may be  
absorbed from the alimentary canal. The  
first splitting of the protein is simple. The  
splitting of the toxins is probably in two or  
more steps and complicated. That enzyme  
"T" easily falls behind "P" in their respec-  
tive tasks explains how the toxins accumu-  
late in the body—to produce chronic ef-  
fects. In has seemed to me that in chronic  
cases the tissues are often so full of toxin  
that it is impossible to free the body there-  
from by any method I have yet used. The  
theory is presented merely for its worth,  
without the many observations I have to sub-  
stantiate it. I believe many observations to  
be explained by the theory.

My idea, further, is that the protein es-  
capes digestion in the stomach because of in-  
adequate digestion and passes directly into  
the tissues as whole or split protein. Many  
conditions, such as colds, nervousness, fear,  
fright, exhaustion, worry, anger, lack of  
teeth, hurried eating, irregular eating, poor  
mastication, etc., depress digestion, probably  
most commonly by reducing the amounts of  
hydrochloric acid and pepsin. A high per-

centage of sensitization cases have low gas-  
tric acidities, especially in the first hour or  
more after eating. (See table).

A partial explanation of the low acidities  
in certain conditions, notably, asthma, hay-  
fever, bronchitis and pharyngitis, is that a  
large amount of mucus is swallowed, which  
being alkaline in reaction, neutralizes acid.  
Probably infectious processes cause gastritis  
and therefore directly inhibit the production  
of the normal stomach digestants.

EWALD BREAKFAST FRACTIONAL TESTS

45 Min.		60 Min.		75 Min.		90 Min.		
Free	Total	Free	Total	Free	Total	Free	Total	
12	27	15	27	22	34	27	38	Average of 25 patients with sensitizations.
0	26	0	102	13	35	30	43	Enteritis.
0	5	0	12	0	15	13	24	Asthma.
—	—	39	52	47	57	51	58	Asthma.
0	16	10	24	10	24	20	29	Asthma (per-
44	62	49	65	60	75	67	80	sistent.)
—	—	—	—	30	38	24	45	Angioneurotic edema.
0	22	2	23	31	54	52	81	Enteritis
4	25	33	55	40	65	61	86	Enteritis
—	—	14	22	—	—	—	—	Enteritis
—	—	0	18	0	15	—	—	Asthma
—	—	—	—	0	10	—	—	Neuritis—Hy-
0	10	8	23	22	36	38	52	pertension.
17	32	20	35	18	35	29	38	Trigeminal neuralgia
21	42	42	57	46	60	47	71	Hay fever neu-
21	47	24	40	23	40	34	51	ritis enteritis
0	11	3	18	8	23	7	22	Enteritis
0	15	10	15	0	8	0	7	Asthma
16	29	29	47	95	155	55	85	Migraine
								Neuritis
								Gastritis Flat-
								ulence

Children, aged persons, the desperately ill,  
and those with highly sensitive throats, I  
have ordinarily not submitted to the ordeal  
of swallowing the tube. They are given acid  
empirically. I have found that even persons  
with normal gastric acidity may be greatly  
benefited by administration of acid for a  
time.

I reported the use of hydrochloric acid,  
pepsin, and calcium to aid digestion and with  
good results in numbers of cases. The cal-  
cium may lessen permeability of the mucosa  
of the upper alimentary tract to whole pro-  
tein. The hydrochloric acid and pepsin were  
to facilitate early stomach digestion of pro-  
teins. The acid unmistakably did great good.  
The pepsin, I believe, helped in occasional  
cases. I have treated a few persons in whom

acid seemed detrimental and the pepsin alone beneficial.

After hearing Dr. Stirling's paper last year, I began using phosphoric acid in place of hydrochloric—giving it in the manner I had the hydrochloric. The results from the two acids are similar. Either acid in considerable quantity, the phosphoric perhaps less than the hydrochloric, increases the acidity of the urine and reduces the power of the blood to neutralize acid.

To get away from highly acid effects on the tissues and the urine, I have lately been using an organic acid (citric). It has worked in practically all cases just as well as had hydrochloric or phosphoric acid in similar cases. At the present time I am using two ounces of citric acid to eight ounces of water and giving from one to four teaspoonfuls in a glass of water sipped with food.

I have used acid in the treatment of a large number of cases of asthma, bronchitis, eczema and flatulence (a sensitization phenomenon I believe) with splendid results. I have treated also a small number each of a great variety of conditions suspected of being due to food sensitization; the results were good in a fair percentage of the cases. I shall report a series of more or less typical cases.

Case number one had severe pruritus of the hands, feet and face. This had annoyed him for months and was gradually growing worse. I gave him phosphoric acid to take with his meals and told him to come in again in a week. At the end of the week he reported that he was no better. I had him double the dose and return in another week. This time he admitted he might be a trifle improved. I instructed him again to increase the dose of the acid. When he returned the next week he said he was well. I instructed him to keep up the use of the acid, and gradually lessen the amount, for six weeks to two months; he has had no return of the trouble.

Some of these cases respond quickly to the use of acid with their foods. Pruritus cases when taken early, and when acid is administered with foods in a sufficient quantity, usually recover promptly. The acid may have to be continued indefinitely in certain individuals. In some severe cases the acids only minimize the pruritus.

Case number two is a woman who had hives for several months. She knew the diet was the etiologic factor but, change the diet as she might, she could not get free of the hives. The use of citric acid with her food gave relief in relatively few days.

Case number three was a baby, about two years of age, with mild eczema. The mother had noticed a general "breaking out" with itching. Their family physician rightly had blamed the diet and tried special diets. The condition made no improvement. Phosphoric acid caused the rash to disappear in two or three days and there has been no return. This was months ago. The medicine was given only about one week.

The mild eczemas, early pruritus and hives ordinarily respond promptly to acid with the foods.

Case number four is a girl about seven years of age, with asthma since early childhood. The attacks generally began with a cold, and soon passed into severe asthma. She was markedly sensitized to many foods—proven by skin tests. Acid was prescribed to be taken with her food whenever she had colds. This was first given her about two years ago and the child has gotten along without asthma. They failed to give acid at start of one cold and she came near having a paroxysm. The elimination of the worst reactors was undoubtedly beneficial.

Not all children who have asthma have it from food. My results with asthma in children lead me to expect good results, however, in perhaps seventy-five to eight-five per cent or even more of the cases. Most persons who suffer with asthma following colds will usually have the asthma controlled by use of acid with food during "colds."

Case number five is a man 83 years of age, who occasionally has had extremely severe paroxysms of asthma. I saw him first in an extremely severe attack and the family was of the opinion that he would not live; it even seemed to me that he might not survive. I gave him the usual emergency treatment for two or three days and prescribed phosphoric acid. The result was most satisfactory.

I could report a large series of cases of asthma in which the only, or the main, cause is food, and where the asthma has not existed for a great length of time or where the paroxysms are not frequent. I expect good results. I make it a practice to prescribe the acid when I first take charge of a case and to make the sensitization tests afterward if relief is not obtainable.

Case number six is a five-year-old boy who had bronchitis most of the time since birth until I gave him citric acid with his food, about three months ago. Before taking the acid the child practically never had been free of cough. The mother says the cough had been most annoying and frequent and



since beginning the acid he has had no cough.

Children, and many adults, who develop bronchitis with colds commonly have their bronchitis clear up promptly, I find, when given acid with their food.

Case number seven is a woman who complained of gas in the stomach and intestines which seem to press the heart, embarrassing her breathing. This patient also had asthma; it was persistent and chronic. Citric acid relieved the flatulence but it only slightly improved the asthma. Testing her for her sensitization reactions and limiting the diet have given her further improvement in her asthma.

Case number eight is a man 54 years of age, who had a great amount of stomach and intestinal distress which had been variously diagnosed and treated—uniformly without improvement. He was given acid with much relief.

There is a condition which I usually term enteritis, the symptoms of which may be described as burning, indefinite pain, discomfort, etc., in the abdomen often associated with flatulence which yields readily to the use of acid with foods.

Cases of flatulence are not as tragic as are many cases of asthma, but, nevertheless, these patients are most appreciative of relief. The administration of acid works in a large percentage—well over ninety per cent I believe—of these cases.

Case number nine was angioneurotic edema of face and eyes in a boy 21 years of age. He was practically blind. He could count his fingers when held close to his eyes with a bright light directly opposite. He suspected his condition was from food and he obtained most wonderful results from advice as to how to eat. The advice was to eat slowly, regularly, and masticate thoroughly and not to eat too much of any one thing. Within four days he came to the office without anyone to lead him. The administration of acid further improved his vision in a short time from 3/200 to 20/100 and it has been improving gradually since. I found it necessary, however, to test him for his reaction to foods and to eliminate all the reactors. This patient had been in the hands of a friend of mine in St. Louis who had recognized the condition as one from food and had tried out various diets—but without more than temporary relief. I believe the acid was beneficial in this patient although it is not easy to evaluate the results. His stomach acid was normal after an Ewald breakfast.

Case number ten is a young man 20 years of age, with migraine of two years' duration; his mother had suspected relationship between his headaches and stomach. Associated with headaches was an inflammation of the eyes. The pain in the head usually came for only a few hours at a time, but practically daily. He was given citric acid with his meals and headaches since have almost ceased. This is a fairly recent case and will have to be reported more in detail at a later date. I may have to test him for reacting foods and eliminate them. There is promise of result without this.

Case number eleven is a young woman with fairly typical trigeminal neuralgia. She has been given acid with her food apparently with most definite improvement.

I reported previously two other cases of facial neuralgia in which, I believed, I had obtained definite proof of sensitization from food, and had benefited by improving their digestions.

The relative dosage of the acids may be figured by computing the replaceable hydrogen in each. Dilute hydrochloric acid for each 4 c.c. has .0101 gm. replaceable hydrogen. Dilute phosphoric has .0123 gm. replaceable hydrogen. As the citric is an organic acid, hydrogen ions dissociate less than in inorganic acids. Citric acid also undergoes digestion, hence, it must be given in relatively large amounts. I find one to two grams of citric acid to be ordinarily beneficial. The citric is less disagreeable than either hydrochloric or phosphoric acid. Certain patients refuse to take hydrochloric acid. Adding the citric acid to lemon, orange or grape fruit juice makes a palatable drink and its value is also enhanced by the citric fruit juices.

#### CONCLUSIONS

1. The theory I advance will help one to understand why digestants are beneficial in the treatment of food sensitizations.
2. Digestants given with food relieve many cases of various types of food sensitization—sometimes when moderately severe.
3. Citric acid has been the digestant of choice, in a large percentage of cases, in my recent work, because of its not unpleasant taste and its anti-acid effects on the tissues and urine.
4. Pepsin may be added to the acid—perhaps advantageously. Pepsin alone may be of service in occasional cases.
5. Sensitization cases ordinarily have too little gastric acid.
6. Acid is given beneficially to certain patients who have normal or practically nor-

mal acid. In such instances it is wise to reduce the citric acid when the symptoms are gone.

7. The dosage of the citric acid has been one to two grams with each meal. If this amount does not give results, larger amounts should be given. The guide, it seems, should be the disappearance of symptoms being treated or the development of symptoms from the acid.

8. Severe cases of sensitization will usually need to have eliminated all severely reacting foods, as well as taking the acid.

#### REVIEW OF HEAD INJURIES OBSERVED IN THE CITY COUNTY HOSPITAL OF EL PASO, DURING THE YEARS 1926 to 1929 INCLUSIVE

DR. GUYNES AND DR. JOHN HARDY  
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The purpose of this paper, as indicated in the title, is to review the cases of head injuries seen in this hospital for the past several years, in an effort to evaluate the present methods of treatment as compared to the course followed in years past.

This paper does not include any original work, nor does it propose to present even the well known text book discussion of injuries to the skull and its contents; but deals rather with the various methods of therapy employed in this hospital, in an effort to ascertain which method of treatment appears to give the best results.

This series of 66 cases seen in the past four years in the City-County Hospital reveals a 51.1 per cent mortality for the entire period. The average age of the fatalities was 31.8 years. The average age of the cures was 16.8 years. The oldest patient that recovered was 47 years of age and the majority of the cures were under the age of 20 years. Thus substantiating in our own experience the well known fact that the prognosis is much better in the younger individual. It was found that the average period of hospitalization for the whole four years was 7.1 days in the cases which recovered.

In the year 1926 there were four cases with a mortality of 75 per cent. The average age of the fatalities was 23 years, and the average time in the hospital was 4.8 hours. The treatment at this time, as evidenced by orders on the charts, consisted principally of the treatment of shock; i.e. hypodermoclysis, morphine, application of heat to the body, and, in some cases, adrenalin.

In the year 1927 there were 13 cases, with a mortality of 61.5 per cent. The average age of the fatal cases was 28.2 years, and the average time that these cases were in the hospital was 19.3 hours. The treatment at this time was much the same as in the year 1926. But in most cases the head of the bed was elevated and an ice cap was applied to the head.

The cases seen during the year 1928 resulted in a mortality of 60 per cent. The average age of the fatal cases during the year was 34.8 years, and the average stay in the hospital was 19.4 hours. The treatment given the majority of cases consisted in elevation of the head of the bed, ice cap to the head, proctoclysis of glucose and soda and an occasional spinal puncture which was not repeated.

During the year 1929, there were 26 cases observed, with a mortality of 34.6 per cent. In the fatal cases the average age was 41.2 years and the average period of hospitalization was 25.2 hours. During this time, the treatment employed may well be divided into two parts, namely:

1. The treatment of shock. The patient was put to bed, local heat applied to the body, morphine used if indicated and a close watch kept on pulse rate and blood pressure. As soon as there was evidence of recovery from shock.

2. Active dehydration was employed; namely, repeated large doses of magnesium sulphate; glucose (50%) intravenously and spinal puncture done early in the treatment and repeated every six to eight hours as long as there was any evidence of increased intracranial tension. The average stay in the hospital in these cases which recovered was 5.8 days.

In the treatment of fractures of the skull with brain injury no definite rules can apply to all cases; however, the treatment can be standardized and from standardization of treatment and principles, certain rules can be formulated that will act as a guide in the treatment of all cases.

The conservative method of treatment has always been given preference in this hospital, rather than the more radical procedure of decompression. Decompression, however, has a place in the treatment of these cases and there are definite indications for its use; and it should be used when indicated.

The plan of conservatism which we have attempted to follow has been, first, the treatment of shock. Of course some cases



come into the hospital relatively late after their injury, and the stage of shock has passed. However, in all cases presenting evidence of shock all efforts were directed toward preventing further trauma and restoring the patient to the normal by the present accepted methods of treating shock.

On recovery from shock the treatment of the cerebrocranial injury should be instituted; i.e.

1. Spinal puncture with the removal of spinal fluid. This is repeated every 6 to 8 hours.

2. Large doses of magnesium sulphate, either by mouth or by rectum given every four to eight hours.

3. The intravenous injection of a hypertonic solution to increase the blood volume and to dehydrate the tissues. Glucose appears to be the ideal agent to use for this purpose because of its low toxicity.

In conclusion we may summarize as follows:

1. The prognosis in cases of cerebrocranial injury is much better in the younger individual than it is in the old, regardless of the type of treatment employed.

2. During the past four years the period of hospitalization of these cases in the El Paso City-County Hospital, has been reduced from an average of 7.1 to 5.8 days, in the non-fatal cases. The period of hospitalization of the fatal cases has shown an increase from an average of 48 hours to 25.2 hours.

3. The average age of the fatal cases has shown a steady yearly increase from 23 years in 1926 to 41 years in 1929.

4. The mortality rate over the period of four years has shown a marked decrease from 75 in 1926, 61.5 in 1927; 60 in 1928 to 34.6 in 1929.

5. Since the greatest decrease in mortality rate was coincident with the institution of a very definite plan of treatment; we feel justified in assuming that, at present, this method gives our patients their greatest chance for recovery and decreases the cost of hospitalization to a minimum.

#### DISCUSSION

DR. MILLER complimented Drs. Hardy, Guynes and Blanchard highly on the type of paper presented and said that the data given showed a careful observation and study by these men and was the sort of work that benefited both the doctors preparing the paper, and those who heard or read the data therein. He pointed out that the use of the term "concussion" is not an entirely satisfactory term, but that it is commonly used to imply an injury to the brain when the x-ray shows no bone injury. Frequently these cases will show intracranial injury, with spinal tap showing increased pressure and blood in the spinal fluid. He said that in re-examination of a number of old skull fractures, he was surprised to find that in these

flat bones, union was by fibrous formation. Dr. Goodwin explained to me that this was the case in all thin flat bone displacement. Fracture of the skull is not necessarily a serious injury, and in many cases we doubt that there is much intracranial damage. However, in industrial cases, the presence of a simple fracture in the skull made evident by the x-ray, is what the lawyers look at, and not the absence of neurological symptoms.

DR. GOODWIN answered that fractures of the skull like fractures of the pelvis, resulted not so much in injury to the bones themselves as to the tissue inside.

DR. CUMMINS commented on the lack of follow up of these cases after they leave the institution. He asked just how much value Dr. Hardy placed on the manometer reading when testing spinal fluid pressure and whether he repeated spinal taps because of increased pressure, as shown by the manometer or upon the clinical symptoms of the pressure. He mentioned that in a recent meeting discussion arose as to the value of the manometer and that the consensus of opinion was that the manometer readings were not a true indication of increased cerebral pressure. Dr. Cummins said that he thought that the reading and discussing of papers of this sort was one of the most important services rendered to the hospital, being based as in this instance, on the work actually done in the institution.

DR. MILLER wanted to know just what the relationship was, between the pulse rate and the blood pressure which indicated the necessity for decompression.

DR. STEVENSON remarked that he thought skull injuries ought to be classified, in such manner that a better indication of the mortality rate could be obtained. For instance he described the eggshell type of injury dying within a few hours after hospitalization, and a flat depression relieved by decompression. Showing the percentage of mortality of the various types of skull injuries would be a truer indication of treatment rendered.

DR. HARDY thanked the staff for the reception of his paper and stated that he took very little credit for its preparation, and said the appreciation was really due the interns, Drs. Gynes and Blanchard.

In closing Dr. Hardy said "In all cases we have had diagnostic spinal tap. In cases which showed a high degree of intracranial tension and clinical symptoms, the spinal tap has been repeated, checking every six or eight hours with the clinical symptoms. The method we have used is observation, constant observation, watching the pulse, state of consciousness, loss of reflexes, involuntary micturition and defecation; when these things occur, we know the patient is going to the bad. Restlessness is to be watched for since it points, as Dr. Dandy says, to one of two things; either the patient is coming out of it, or going deeper into unconsciousness. Occasionally we have had a case showing intracranial tension, the projectile escape of spinal fluid, not benefited by spinal tap. In these cases decompression was done, and done quickly. There is another type of skull injury which deserves mention. The type which on spinal tap brings forth very little fluid. I would advise doing nothing, further than watching the pulse, observing the loss of reflexes, and progressive paralysis. Generally this type can take care of his disability without the necessity of operation. When the moment comes however, when operation is indicated, operation must be done, and done immediately. This is the general treatment of all these reported cases.

## A CASE OF PARALYSIS, PROBABLY DUE TO JAMAICA GINGER.

JAMES J. GORMAN, M. D.  
El Paso, Texas

(Presented at Hotel Dieu (El Paso) Staff Meeting  
on April 9th, 1930)

We are scarcely able to read a current newspaper that we do not see a report of a number of cases of paralysis due to Jamaica ginger. Since this case seems to be rather typical of that condition I wish to present it to you for your discussion.

Case No. N-364; male, white, age 37. Telegrapher and water service helper. Examined March 21, 1930. Chief complaint, paralysis of hands and legs.

P. I.—Had been in good health until Feb. 15th. On this date he was awakened by a chill which lasted about an hour. He had a diarrhea but no vomiting. Remained in bed that day and felt normal the following. On March 1st, he worked all day standing in water to his knees. On the second he noted a tired feeling in the legs which grew more pronounced and after about four days had a soreness in the calves of the legs. The knees became weak and he was forced to quit work after one week. Apparently no involvement above the knees. On the ninth his hands began to grow tired, followed by a stiffness and in a few days by tingling in the tips of the fingers which lasted about one week and later numbness. Was able to use his hands for about a week but during the past week had been unable to move the fingers of the right hand and those of the left only very slightly. At the onset had a dull pain in both shoulders, right ankle, and back but this disappeared after a few days. At no time has he had any severe pain in either arms or legs and there is no loss of sensation. At present is not able to use his hands and can only walk with support. For about one month prior to onset of paralysis was accustomed to drink about six to eight ounces of Jamaica ginger at least twice a week.

P. H.—Essentially negative except for scarlet fever and pneumonia in childhood. Influenza in 1918, and occasional sore throat.

F. H.—Father died at 88; mother at 74 of paralysis, and one sister of tuberculosis and one brother of rheumatic fever.

Phys. Exam.—Patient is well developed and nourished. He is scarcely able to walk and has a shuffling gait and a marked toe drop. General examination is negative except for neurological findings. There is practically complete paralysis of the extensor muscles of the leg and forearm. Is unable to move the toes and the fingers of the right hand. Very slight movement of the fingers of the left hand and the movement is most marked in the outer two fingers. No grip possible. Sensation to touch, heat and cold is normal. Patellar reflexes are diminished. Eye ground examination negative. Urine and blood examinations normal. Blood Wassermann negative. Spinal fluid examination showed cell count 3, globulin trace. Wasserman negative. Colloidal gold test 5555400000 (paretic curve).

Examination on April 18th showed definite atrophy of the small muscles of the hands. Patient felt that he was some better, stating that he seemed to have slight use of his hands. This I was unable to confirm. On the possibility that arsenic might be present sodium thiosulphate was given without apparent improvement. Through the courtesy of Drs. Ramsey, Black, and Hardy a specimen of the Jamaica ginger used by this man and another man who was under the care of Drs. Hardy and Black

was obtained. The specimen was labeled as containing 83 per cent alcohol. Dr. Black and I have had specimens examined by three chemists working separately. So far we have obtained nothing but negative data. Examination for arsenic, lead, methyl alcohol and phenol groups are negative. Further examinations are now being made and we hope to have a more complete analysis to present at the next meeting.

## REPORT OF THREE TUMORS OF THE NECK

W. L. BROWN, M. D. and C. P. BROWN, M. D.  
El Paso, Texas

(Given at the Staff Meeting of Hotel Dieu, El Paso, on April 2, 1930.)

### CASE 1.

Mrs. R. M. C., age 39, married. No serious sickness. For eight years has had a small lump on left side of her neck just below the angle of the jaw; for the past year it has been enlarging perceptibly; it is now about the size of a medium size hickory nut. The tumor is excessively hard, almost like cartilage; it is moveable, not involving skin or deeper tissues. It is not tender on pressure and never has been. No definite preoperative diagnosis was made. Tumor was looked upon as a gland and possibly tuberculous in nature. It was removed under local anesthesia and gas; it was shelled out and had a definite capsule. It had no connection with the parotid gland.

Postoperative diagnosis: Mixed Celled Tumor.

### CASE 2.

Mr. B. G., Mexican, age 35. Was struck on right side of face in the region of parotid gland over three years ago. Soon after a tumor formed; it has been increasing in size for the past seven months; has never been painful or tender on pressure. It is fairly moveable, excessively hard and slightly nodular. No glands under his arms or elsewhere. Preoperative diagnosis in this case was mixed celled tumor. It was removed under general anesthetic and was found to be in close proximity to the parotid gland and facial nerve. It was shelled out without any injury to either.

Postoperative diagnosis: Mixed Celled Tumor.

DISCUSSION:—These mixed celled tumors are only very mildly malignant, if at all. If the capsule is ruptured in their removal, there is a possibility of their return. Ewing states "In the salivary glands, buccal, mucosa, palate, lips, neck, orbit, lacrimal gland and face occurs a group of tumors about the origin of which has long been maintained an active controversy. These tumors are of complex structure, usually presenting epithelial elements in the form of cell strands, alveoli or diffuse masses, and mesoblastic tissues, chiefly cartilage, mucous tissue, and cellular connective. Any one of these elements may predominate, giving nearly pure chondromas, sarcomas, or carcinomas, but usually all the cell types are represented." Grossly these tumors resemble one another very closely. They are round, nodular, not tender or painful, grow as a rule not in the gland but in close proximity to it. They occur very commonly in the region of the parotid, submaxillary and soft palate, and occasionally just lateral to the midline of the upper lip.

### CASE 3.

Mrs. H. S., married, age 36. No serious sickness of any kind. Is not subject to tonsillitis. A few weeks ago went to Albuquerque to take chiropractic treatments on account of severe headaches. She now comes complaining of swelling at the base of



the neck on left side just above clavicle. This she noticed about five or six weeks ago. She had not been sick prior to that time; was only attracted by the swelling; no pain or soreness; neck feels tired at times; says it has not enlarged much in size since first noticed. States that it is much larger at night than in the morning.

She has a good many filled and crowned teeth; tonsils are quite normal; just over the inner end of the left clavicle, there is a swelling about  $1\frac{1}{4}$  inches in diameter that extends well down under the clavicle; is quite moveable; is not tender on pressure; there are no glands about the neck or under the arms. Blood: White cells, 8,000; polys 66 per cent. Wassermann negative.

**DISCUSSION:**—This tumor is not as hard as either of the above; is of short duration. It was removed under general anesthetic and there were found three other small glands, closely connected with it. This finding made it certain that it was not a giant cell tumor. The laboratory report was Hodgkin's disease or possibly lymphosarcoma.

**DR. ROBERTSON**, Professor of Clinical Pathology, Mayo Clinic:—The subject of mixed celled tumors of the parotid is an interesting one and their classification has varied. Many years ago they were diagnosed as endotheliomata, which at that time was rather a waste paper basket diagnosis. The tendency today is to regard these tumors as a low grade malignancy of the carcinomatous type. The question of course arises as to why the presence of cartilaginous material and sarcomatous like cells. Pathologically they are really carcinomatous. They may occur any place about the cheek or mouth. They occur in tissue which is embryologically and histologically inactive. In other words, of a low grade activity histologically. Therefore, they should give rise to low grade growths. To me the presence of cartilage is accounted for by the slow growth of the connective tissue with an associated large amount of mucus and therefore the formation of cartilage.

It is not safe to give a favorable prognosis in these cases even though most of them get well after removal of the tumor, for it is well known that a percentage, though small in number, grow fast and terminate fatally.

Dr. Waite, as all good pathologists are wont to do, is certainly correct in guarding his diagnosis of Hodgkin's disease in the last case, because, as we all know, Hodgkin's disease may produce most any appearance.

## CASE REPORT

### (Compound Comminuted Fracture Both Bones Left Leg.)

CHARLES N. PLOUSSARD, M. D.,  
Phoenix, Ariz.

(Read at monthly Staff Meeting of St. Joseph's Hospital, at Phoenix, Ariz.)

Patient, an adult white male, was brought into hospital on stretcher conscious and rational with history of having been hit by car while riding motorcycle. Immediate examination revealed left leg badly crushed, foot rotated so that toes were pointing posteriorly, markedly swollen with deformities and malposition almost beyond description. Tibia protruded through skin above ankle and again just below the knee. Limb was bleeding profusely and fat, bone marrow, fascia, and muscle extruded from wounds. Patient's general condition was fair. Morphine gr.  $\frac{1}{4}$  was given immediately by hyperdermic. The leg was put up in a Thomas extension splint

with extension from foot by means of a flat piece of steel which was fastened around arch of foot and heel with adhesive. Bones moulded into best possible position (Fig. 1) but no great amount of ma-



Fig. 1

nipulation was done at this time because of the extensive injury already done to soft tissues. Fifteen hundreds units antitetanic serum was given. The following day the patient's condition was improved but on the second day after injury the leg was much more swollen, temperature 104, and he was



Fig. 2

irrational. There was a large amount serosanguinous drainage requiring dressing every two hours. Odor from wounds aroused suspicion of gas bacillus infection. X-ray taken at this time showed some air in tissues but no definite crepitation could be determined. Patient's condition was not good and he



Fig. 3

appeared quite septic. Hot magnesium sulphate packs were applied continuously. The following day he looked even worse; abdomen was distended; limb was more swollen and more bluish in color. Drainage of bloody serum became more abundant. Patient's general condition grew worse; temperature and pulse mounted and leg looked as if amputation above knee would be necessary. Morphine was required for pain, and intravenous glucose and saline were given with patient taking large amounts of water by mouth. The next day, (five days after injury), patient's condition seemed improved, limb not being swollen so and color appeared better. On March 23rd, (ten days after injury), patient's condition was much better, the leg was much less swollen. A large fluctuating area in limb was incised under local anesthesia and a large amount of pus mixed with debris, consisting of muscle tissue and fascia, escaped. Wound was dekinized every

three hours. Bones were moulded into better position and apposition plates applied with lateral pull over angulation of fragments. More extension was also applied to foot. The condition of the limb and general condition improved steadily. On April 27th large fluctuating areas over entire leg between fractured bone ends appeared. Four incisions were made into these areas, emanating large amount of pus and debris including, it seemed, all kinds of soft tissues: for example, nerves, muscles, tendons, vessels and fascia. Wounds were darkized every three hours. Tibia between fractured areas was absolutely devoid of any muscle attachments. It appeared dead with surface resembling a bone from which the tissues had been removed by boiling. The following day, patient had a chill accompanied with nausea, vomiting, and inguinal adenitis. Temperature was 105.6 pulse 150. He was quite irrational. Redness, tenderness and pain extended above knee on inner side of thigh almost to scrotum. The next day his condition began to improve and cellulitis above knee gradually subsided. Condition continued to improve steadily although there was still much drainage from many sinuses in limb still present. On May 11th, there seemed to be some union at both fractured areas and a week later the Thomas splint and extension were removed and limb placed in basket splint. Drainage and swelling were gradually becoming less. Movement in ankle and knee was begun more vigorously. He was allowed up in the wheel chair and was discharged from hospital on June 5th. There were six draining sinuses still present in infected area. On several occasions, small sequestra were removed from draining sinuses. On July 24th, x-ray showed large sequestrum at lower fractured area apparently separated (Fig. 2).

Under spinal anesthesia an incision was made over anterior tibia at lower fracture. Three quite large sequestra were removed leaving a gap between fractured ends of bone about one and one-half inches wide. This was packed with iodoform gauze and left wide open. Two days later patient had a severe chill. He was not irrational but temperature went to 104 and pulse 130. Condition of patient no bad, however. He improved rapidly after this. A posterior plaster cast was applied and patient dismissed from hospital on crutches. He has been reporting to the office about twice a week. On September 30th, diathermy three times weekly was started, with one electrode on sole of foot and the other above the knee. Improvement was noticed almost at once. Drainage lessened and condition of limb including knee and ankle joints improved with remarkable rapidity.

In January, 1930, he was walking with cane, movements at knee and ankle being almost normal, with union fairly firm in both fractures (Fig. 3). No enlargement of limb. Still two small drainage areas suggesting presence of small sequestra. These will no doubt come to the surface soon. He is able to drive a car with no inconvenience whatever and says limb feels normal in every respect.

In May, 1930, patient resumed his duties as a motorcycle policeman.

## CASE PRESENTED FOR DIAGNOSIS

DR. H. S. NEWMAN

(El Paso City-County Hospital Staff Meeting,  
April 16 1930)

R. R. A., male, white, age 26, mechanic. Wife living and well. Family history negative. Normal diseases of childhood; influenza several years ago, and "rheumatism." Rest of history negative.

Present Illness.—Feb. 25th, he arrived from Yuma, Arizona, where he had been working as in-

door mechanic for two or three months. Came by auto and camped out two or three days. Doesn't know exactly when he started being sick, but says he had been feeling ill for two or three days before leaving Yuma. Complained of general lassitude, severe headache, loss of appetite, belching, gassy and uncomfortable abdomen, little cough, and afternoon fever. He no diarrhea and said bowels were regular. There was no urinary disturbance (but I see that Dr. McCamant has written on the history sheet that he had some pain on urination, but that it was not constant). His chief complaint, then, was headache, uncomfortable abdomen, general lassitude, and fever. He had no chills at all and no sweating up to this time.

I examined him at night at one of the camps on Feb. 27th. The lighting was poor but I could make out what appeared to be a few rose spots on abdomen and chest. He was a husky, well nourished individual. Temp. 104.4, pulse 96, resp. 25, blood pressure, 117/78. Tongue was coated, mouth and throat otherwise clear. Lungs negative. Heart negative, except for a loud systolic murmur at second left interspace, sternal margin. Abdomen was distended and much rumbling around of intestines was heard. No tenderness nor rigidity. Spleen not palpable and liver not enlarged. He had a little soreness in back of his neck on flexion, but no rigidity. Reflexes were apparently normal. Examination otherwise negative. Next morning I went to see him again. His temperature was then 102.2, pulse 96; otherwise his condition was unchanged. I sent him to the hospital with a working diagnosis of typhoid. There he was shifted around from one service to another, everybody disclaiming him. He ran an irregular febrile course for 36 days in the hospital and possibly for four or five before entering, making something over forty days with fever. His morning temperature was low, usually around 100, but for the first four or five days it was around 102, the afternoon temperature was around 104 for the first six or seven days and then around 102 after that. After about his 14th or 15th day in the hospital the morning temperature touched normal or below, about the 32nd day his fever started to break and from then on was seldom over 100 in the afternoon till the 36th day when it reached normal and stayed there. His pulse during all this time never went over 100 and was usually around 90. His headache disappeared soon after entering the hospital, his appetite became good, and the only thing he complained of was fever, and severe drenching sweats nearly every night, unassociated with chills. He had one chill during his entire stay in the hospital. At one time, for several days, he complained of a little soreness in the gall-bladder region, and the upper level of the liver seemed a little high. Dr. Cummins examined him but found no surgical condition. Dr. Liddel examined for tuberculosis with negative results. An x-ray of his chest was made and Dr. Waite made the following reading: "Film shows a rather large heart shadow and the aorta appears to be wider than normal. There are some old scars in the region of each hilus, otherwise there are no marked changes. This is suggestive of a syphilitic heart disease." His white cell count was 14,000 with 83 per cent polys; no parasites were found in a blood smear; his blood Wassermann was negative; Widal at first was reported negative and then positive and again negative. A recheck at one of the uptown laboratories proved to be negative. A blood culture at first was negative but another on the 12th day was reported positive with "active, gram negative bacilli, resembling typhoid." Neither of these cultures though, were incubated for more than three



days. Two agglutination tests for *Br. abortus* and *melitensis* were negative in a dilution of 1 to 200. A lower titer than this was not tried for some reason. On the 6th day a blood sugar of 140 mgm. was reported. On the 17th day his white count was 12,000 with 68 per cent polys. His urine on several occasions was reported negative except for "few" or "occasional" pus cells. A stool culture on the 29th day was negative for typhoid bacillus.

The point of interest in this case is that this man was in the hospital for 30 days, was seen and examined by the internes and by several of the staff members, including myself, a good deal of laboratory work being done, and still undiagnosed. Dr. McCamant finally stepped in on the 30th day of his stay in the hospital and supplied us with diagnosis. Otherwise he would have been discharged undiagnosed. His diagnosis was that of pyelitis; whether or not it is the correct one, I do not know. At least I cannot disprove it. On the 31st day he started giving him two capsules of caprokol three times per day and on the next day, after taking only capsules, his fever started to break, but it had been showing signs of wanting to break before then, I think. I might add that the patient had been given a course of quinine with no effect whatever on his temperature curve; also that the systolic heart murmur heard on the first examination showed no variation throughout the illness and that no petechiae were ever observed.

#### DISCUSSION

DR. McCAMANT spoke of the contradictory symptoms of this patient, called attention to the fact of his having one chill followed by temperature of 104.5 and after this temperature severe sweat. His blood count was relatively high. No tenderness anywhere in the abdomen except between the gall bladder and McBurney's point and no pain even at that point. The patient's temperature ran along at 99 and 98. Widal five or six days after entrance (having been sick five or six days before coming to the hospital) was negative, but was positive on the 14th day. He had had typhoid inoculation in Arkansas which might have accounted for the positive Widal. The second time the man was sent to my service, I saw him following one of these heavy severe sweats, and he complained of some burning on urination. There was no prostatic infection. He had some internal hemorrhoids, but not sufficient to give him the trouble that he gave evidence of. He continued to have night sweats, and to run an intermittent temperature. He was then put on caprokol and the sweats stopped, and his temperature subsided. I claim the man had pyelitis. Urinalyses showed pus in small amounts.

DR. NEWMAN replied that the man's temperature and sweats had somewhat subsided before he was given caprokol and that he was of the opinion that the temperature course was about over, and would have remained down without further treatment.

The question arose as to whether or not there was an endocarditis. Dr. McCamant said the main thing agains that was that the man got well. Dr. Gallagher replied that the man had had it once and got well, why not again?

DR. CUMMINS told of examining the patient while under surgical service. He said that he could find nothing indicative of trouble with the gall bladder, no tenderness anywhere in the abdomen, and nothing to show that he had much the matter with him in the genito-urinary tract. He stated however, that in his opinion the man should have had a cystoscopic examination and urine culture.

DR. GORMAN made the following summary, "I

think this case demonstrates the necessity of accurate laboratory data. Such conflicting data as we have in this case makes it difficult of interpretation. It occurs to me that if we had a kidney infection sufficient to give the constitutional symptoms recorded and the blockage which would be expected from the urinalysis that we would find tenderness over the kidney region. Another point is that when the temperature subsided we would certainly expect to find more than an occasional pus cell present. The relatively low blood count with such a high degree of fever is against pyelitis. There is an old endocarditis present. A subacute endocarditis is not necessarily fatal and in my observation blood cultures will not be positive in more than 40 to 60 per cent of the cases. In my opinion this man had a subacute endocarditis."

DR. JAMIESON: "I quite agree with Dr. Gorman that if this were primarily a case of pyelitis, there should have been more than just a few pus cells. The patient would have had tenderness over the kidney if the infection was located there. There is another possibility and that is that he might have had an old infection of the posterior urethra, dropping out occasional pus cells. The possibility of gonorrhea is ever present. In my opinion, subacute endocarditis, appears to be the most likely diagnosis."

## DIAGNOSTIC FORUM

### DIARRHEA AND PAIN IN THE RIGHT FOOT

(Case 15201, Case Records of Massachusetts General Hospital, from New England Journal of Medicine, May 16, 1929).

#### CASE RECORD

A married American woman forty-seven years old entered April 30 complaining of intermittent diarrhea of four months' duration and pain in the right foot and leg for a week.

Five months before admission she had an attack of gripe. She stayed in bed a week, then felt well until the end of the month. Then she had an attack of diarrhea lasting a day with some fever and cramp-like generalized abdominal pains. After this she had constipation for four days, the pains continuing. She strained a good deal at stool and developed hemorrhoids. She took laxatives until her bowels began to move. Her physician gave her some medicine which seemed to keep her bowels regular. The pains persisted for two weeks. During that time she stayed in bed. After this attack she had six or seven similar ones, each a little longer and more severe than the last, always accompanied by the pains and followed by constipation. She had not however been forced to go to bed since the first attack until the last one. The stools had been soft, but otherwise normal. February 28 she was examined at the Consultation Clinic of this hospital. Vaginal examination was negative. The urine was negative. There were some small hemorrhoids. Proctoscopic examination showed a pale, slightly granular mucosa but no ulcerations. The whole right side of the abdomen showed tenderness. Fluoroscopic examination with a barium enema showed that the whole colon filled normally. The tip of the cecum was displaced toward the midline and overlay a loop of the sigmoid from which it could not be separated. The colon seemed somewhat limited in motion. Chest examination showed the diaphragm in the normal position. The lungs were clear. A diet was advised which the patient did not follow. Four weeks before her admission to the hospital the last attack of diar-

reha began suddenly. Her bowels moved three or four times a day at first, then one day moved fifteen times. The condition, including the usual cramp-like pains, became gradually worse. For two weeks she had had attacks of nausea without relation to eating and had vomited several times. For a week she had had difficulty with micturition. Then she began to have severe dull aching pain in her right knee radiating down the leg to the foot and most severe in the great toe. The leg and foot became cold and tingled. This condition became gradually more severe. Pills given by her physician relieved the pain, diarrhea and cramps. Her bowels had not moved for four days before admission. Three days before admission she found the foot was becoming purplish, especially in the region of the great toe. The color gradually deepened. She had been in bed for four weeks. During this attack and the previous ones she had had fever, 101° to 102°. She thought she had gained about two pounds since the onset of the illness.

One brother died of tuberculosis. The patient was not exposed.

She had always been well and strong except for an attack of influenza twelve years before admission. She was in bed for two weeks. She had had one miscarriage following a fall. Her bowels had been slightly constipated for years.

The patient was having such severe pain in the leg and foot that the history was left unfinished.

Clinical examination showed a fairly well developed and nourished woman lying in bed groaning. Skin hot, dry, very coarse. Half dry. Marked pyorrhea. Tongue showed a wavy brownish white coat. Boggy submental glands. Abdomen distended but rather soft, tympanitic. No dullness in the flanks (?) palpation difficult. No organs or masses felt. Liver dullness at the fourth rib anteriorly. Vaginal examination showed creamy discharge; tenderness in the left lower quadrant on bi-manual palpation. Rectal examination moderately painful; nothing was felt. Right ankle cool, foot cold and tender. On the right great toe was a circumscribed deep purple area, tender, not swollen. On the heel was a similar patch. No dorsalis pedis pulsation was felt. Pupils contracted (morphism); reactions normal. Knee jerks normal.

Before operation urine normal in amount, specific gravity 1.008 to 1.012, a few leukocytes and rare red blood corpuscles at two of three sediment examinations, 50 to 60 leukocytes per field at a fourth. (No catheter specimen.) Blood before operation: 19,000 to 9,000 leukocytes, 84 per cent polymorphonuclears, hemoglobin 75 per cent, reds 5,350,000, slight achromia. Two Hintons negative. Stools: guaiac negative at six examinations.

Before operation temperature 99° to 103.5° with two drops to 97° and 97.6° May 9 and 11.

At x-ray examination the arteries of the right leg were not visible. The bones showed no definite variation from the normal. The lung fields were clear. The diaphragm was rather high on both sides. The heart shadow was not remarkable,—possibly a little prominent in the region of the left ventricle.

With enemas the distention became less and the bowels began to move normally. The patient continued to have considerable pain in the right foot. May 19 the right leg was amputated at midnight under spinal novol. Pathologic examination of the popliteal, anterior tibial and dorsalis pedis arteries showed thickening of the intima and an increase of fibrous tissue in the media; no calcification.

May 24 the patient vomited. Four days later she

was still vomiting, had a chill and very poor pulse, and looked quite ill.

May 29 a second operation was done.

June 9 there was some sloughing of the fascia from the leg wound. Two days later there was more separation and more sloughing. There was only occasional vomiting.

June 12 Alpine lamp treatment was started. The separation and sloughing increased. A large decubitus developed over the sacrum. The patient became irrational. She took little by mouth.

June 17 she died.

The following discussions of this case were presented before the Clinical Club of Phoenix, at their regular Monday luncheon meeting, Jan. 8, 1930:

#### DR. F. C. JORDAN

The salient points in this history are:

First, intermittent attacks of diarrhea and constipation, always accompanied by cramps and fever; each attack seemed a little longer than the previous one.

Second, severe pain in the right leg and foot, obstruction of the arterial supply terminating in gangrene and a mid-thigh amputation of the right leg.

Her past history was, essentially, negative.

Clinical examination: A married woman, aged 47, fairly well nourished, groaning with pain, some fever, marked pyorrhea. Chest, clear; abdomen, soft and tympanitic, no masses felt, no dullness in the flanks. Vaginal examination negative except for a creamy discharge. Right ankle cool, foot cool and tender with a deep purplish circumscribed area on the great toe which was tender but not swollen, and a similar patch on the heel. The urine was essentially negative except for a fairly well fixed specific gravity of 1008 to 1012. There was a constant leukocytosis with a high percentage of polys. What was the cause of the intestinal symptoms? There was some attachment of the cecum to the sigmoid which could not be separated under x-ray manipulation. Adhesions might cause a partial intestinal obstruction with all the above symptoms. Was there a malignant growth in the lower intestinal tract? The perfect filling of the bowel with barium, the absence of loss of weight and the absence of marked anemia would make this diagnosis improbable. We believe the alternating constipation and diarrhea were caused by adhesions which produced a partial intestinal obstruction. What was the cause of a gangrene of the right foot? The causes of gangrene are thrombo-angiitis obliterans, Reynaud's disease and arteriosclerotic changes. We do not believe it is thrombo-angiitis obliterans for the following reason: It is almost invariably found in men; it is most common between the ages of 20 and 40 and the examination of the arteries of the amputated leg were not characteristic of this disease. We would rule out Reynaud's disease because it is nearly always symmetrical and there are practically no pathologic changes in the blood vessels. How about arteriosclerotic gangrene? This is usually found in older people. There is a high blood pressure and palpable sclerotic vessels. The absence of these characteristics would be against this diagnosis, yet, we believe this is the most probable cause of the gangrene.

Our diagnosis is death was caused by sepsis following amputation of the leg. The gastro-intestinal symptoms were due to a partial intestinal obstruction due to adhesions.



## DR. FRANK J. MILLOY

An analysis of the symptoms and physical findings in this case fail to reveal any pathognomonic sign or finding by which we can associate this patient's diarrhea with the pain in the right foot. The pain in the right foot and the subsequent history of this symptom is a clinical entity. From all the negative examinations of the colon and the stools, the most likely explanation of the diarrhea is an irritable colon. However, there are several causes of intermittent diarrhea which have not been eliminated in the examination. A primary carcinoma of the colon might cause diarrhea but it would have been found, no doubt, by barium enema and the guaiac examinations would have been positive. An infestation by amebae or other intestinal parasites could cause such a diarrhea but the history is not very typical and apparently this was not suspected or a more thorough stool examination would have been made. A latent syphilitic infection will cause diarrhea and really syphilis has not been eliminated in this case by two negative Hintons. However, the most plausible explanation of the diarrhea such as this which is characterized by intermittent spells of cramps and constipation is most likely an irritable colon which was a complication of the attack of influenza which just preceded the first spell of diarrhea.

The causes of gangrene of an extremity are: diabetes, Raynaud's disease and thrombo-angiitis obliterans or so-called Buerger's disease. Diabetes seems to be eliminated by the low specific gravity of the urine although nothing is said of urine or blood sugar. Raynaud's disease is a condition also known as symmetrical asphyxia or gangrene and is a vasomotor or trophic neurosis. It is most usually observed in neuropathic or emotionally unstable individuals or patients who have suffered from long standing constitutional disease. It is characterized by coldness and discoloration of the extremity and often develops dry gangrene. There is no demonstrable anatomical change in the blood vessels. During the progressive stage of the disease, it is usually painless and when recovery commences there may be more or less severe tingling and burning pains in the extremity. The majority of cases terminate in recovery.

The sudden onset of severe dull aching pain in the right knee radiating down into the leg and foot, the purplish discoloration especially in the region of the great toe, the cold tender foot and ankle, the absence of swelling and the absence of pulsation in the dorsalis pedis and the rapidly progressive course of the disease is a classical description of thrombo-angiitis obliterans. The pathological examination of the arteries of the leg describes the periarteritis which occurs in the healed or latent stage of this condition. The acute stage of this patient's condition apparently passed without any noticeable symptoms. It has probably extended beyond the arteries of the thigh to account for the advancing gangrene. The post mortem may show a thrombosis in the acute stage of this condition in some of the pelvic arteries. The woman must have died from sepsis from the gangrene extending beyond the thigh and the decubitus over the sacrum. There seems to be no way to associate the obliterative thrombo-angiitis with the preliminary history of diarrhea.

Diagnostic conclusions by members of the Club on this case were as follows:

Dr. V. Randolph: Pelvic infection; thrombosis of right iliac artery.

Dr. A. C. Kingsley: Infection in right pelvis; arterial thrombosis in pelvis.

Dr. R. J. Stroud: Endarteritis obliterans; infection right pelvis, with pressure or obliteration right iliac artery; carcinoma right pelvis; death from sepsis.

Dr. H. Randolph: Pelvic infection involving colon also; thrombosis femoral artery.

Dr. T. T. Clohessy: Embolism from some abdominal condition.

Dr. S. I. Bloomhardt: Thromboarteritis obliterans; pelvic infection.

Dr. Fred Holmes: Raynaud's disease or thrombo-angiitis obliterans.

Dr. J. M. Greer: Thrombo-angiitis obliterans.

Dr. W. W. Watkins: History suggests malignancy of bowel, malignancy in pelvis, infection in pelvis; clinical examination suggests malignancy or infection in pelvis, thrombosis of iliac artery; laboratory findings suggest infection in pelvis and thrombosis in right iliac artery.

The following discussions of the case were given by Group II, before the Yavapai County Medical Society and Medical Officers of Fort Whipple, at their meeting of February 11, 1930:

## DR. W. C. MELOY

We are presented with two symptoms, which may be coincidental or may each be etiological factors. The first is diarrhea and pain followed by constipation. The causes for this are very numerous, many of which we feel we can exclude without going into. Simple enteritis would hardly have gone on to this violent ending. A more progressive enteritis would certainly have shown blood in the stool, but all guaiac tests are negative. There may have been syphilis, tertiary form, which could give pains, diarrhea and vomiting, but both Hintons are negative. There could be nerve irritation following influenza which could give spasm and hyper-peristalsis and consequent diarrhea. It could be a spasmodic condition causing an ischemia with the same results, or it might go on to a type resembling Buerger's disease, which would give us thrombi throughout the mesentery. However, the laboratory report gives us a high leukocytosis, with 84 per cent polys; the temperature has been high and to my mind, this woman presents a picture of infection.

The cecum is well over towards the midline and is apparently bound down to a loop of the sigmoid. This could be caused by perityphlitis or by any inflammatory condition of the pelvis. It is very suggestive that it has something to do with the generative organs because of the purulent discharge which was noted later and the pain in the pelvis.

The second condition: We are sure there is an arteritis but we do not believe that the arteritis is sufficient to cause the gangrene that we see presented. There is absolutely no history of intermittent claudication or any symptoms that would point to poor blood supply up to one month before the patient was taken in this last illness. It should not be a generalized arteriosclerotic condition because in this late stage the x-ray would have shown it and the symptoms should have been gradual. It is not one

of the nerve lesions because the intima is definitely thickened and the media definitely fibrotic. It must have been a chronic endarteritis because fibrous tissue is not an acute formation. With a luetic condition we would expect more sclerosis and the same thing in a diabetic condition. We are not given any definite report as to sugar in the urine but the low specific gravity would lead us to rule diabetes out.

Buerger's disease, in the moderately advanced form, could very readily give this picture, but from the pathological examination, no thrombi were noted in the area examined, so evidently the stopping of the arterial flow was well above the mid-thigh. The gangrene at first was dry. The foot was cold and edema was noted following the first operation. No mention is made as to whether or not the stump bled freely. We are led to suppose so or they would have amputated still higher. Then there is sloughing of the wound, which may be due to infection or to wet gangrene.

A mass in the right side of the pelvis could be either inflammatory or expansile, and as it expanded could press upon the iliac artery sufficiently to slow down the blood supply to the already damaged femoral artery to such an extent that thrombi could form in the iliac or femoral arteries very easily. Adhesions in the right side of the pelvis, by contracting, could cause the same results. The pressure could go on to such extent that the veins would be contracted down and cause wet gangrene. In this case, however, it would be necessary for collateral circulation to have taken the blood into the leg.

The patient's vomiting and the general septic condition, to my mind, points very strongly to infective process in the pelvis associated with a definite chronic endarteritis.

#### DR. JOHN D. BROOKS

My colleague has covered this case pretty well and there is very little left for me to say.

It is self-evident from the history as given us that this woman was suffering from a condition of some obstruction to the circulation in the lower extremity. I don't say that that was all, but the fact that the leg was amputated in mid-thigh shows that it was very grave. Results of that amputation, as given by the pathological examination, show obstruction in the vessels, the vessels are narrow, but they say nothing of any thrombi being found, so that the thrombi must have been higher up. I believe this woman had thrombosis up above.

It does look like Buerger's disease except, as Dr. Meloy has told you, it was very slow in coming on. She had other preliminary symptoms such as nausea, vomiting, cramps and diarrhea. I am inclined to attribute that to some intra-pelvic condition, of which nothing is given us except that one examination showed the cecum over toward the midline and overlying a loop of the sigmoid and attached to it. That could come from almost any inflammatory condition there. What diarrhea and cramps had to do with the thrombus, or blocking of the artery of the leg, is not at all clear.

Evidently they did not go high enough at the first operation because there was sloughing of tissues and true gangrene. Undoubtedly she had on infection which became very much worse—all her symptoms became worse. They tried to clean it up with the alpine lamp but it became worse.

What the pathology is in the pelvis I am at a loss to say. I believe that there may be inflammatory process, infection even, in the pelvis. I also think it possible that she had minute thrombi in the mesentery prior to the occlusion of large vessels in the

leg that may have given her cramps and diarrhea. What the origin was, I am at a loss to say, but there was something pressing there. If the temperature had been a little more continuous in the beginning, it would have looked like inflammation of the bowel, such as typhoid, but that is ruled out because of the negative stools. With diarrhea for months and hemorrhoids, it seems strange to me that there was no blood in the stools.

Our diagnosis is occlusion of the blood vessels of the leg, amputation, re-amputation, sepsis and death.

The following discussions were given at the Clinico-Pathological Conference at the Massachusetts General Hospital (see above journal).

#### DR. RICHARD C. CABOT

They are looking hard for evidence of intestinal obstruction or intestinal ulceration, but they are not finding it, and my guess is that they went on to physical examination somewhat baffled.

We do not yet know how many examinations of the urine there were, or whether these figures constitute any limitation in the swing of gravity.

Summary:—Here is a gangrene, I suppose arteriosclerotic in origin, although the woman is young for it, with no embolic source indicated in the rest of the body. We shall have to speculate later about the abdominal symptoms.

The second operation was I assume on the same leg, but I do not know.

#### DIFFERENTIAL DIAGNOSIS

The striking thing about the patient in the first place is that she is so young. Forty-seven is young for a gangrene which we must, so far as I see, call arteriosclerotic. With the same symptoms occurring at seventy-seven or sixty-seven we should say, "Of course, that is what we expect." But at forty-seven it is unusual. Nevertheless I do not see evidence for any other cause.

What about the abdominal symptoms? Naturally, with a proved vascular trouble in the leg one speculates as to whether there is a similar vascular trouble in the abdominal arteries. We know something about cardiac arteriosclerosis, something about arteriosclerosis in the extremities. We have never, so far as I know, been able to construct a satisfactory clinical picture of abdominal arteriosclerosis. And yet the pathologists often point out to us cases in which there is more extensive arteriosclerosis in the abdominal vessels than anywhere else. It seems as if there ought to be a well outlined clinical picture of abdominal arteriosclerosis, but I think it still has to be said that there is not. I have seen quite a number of cases, and read of others, with about as much as this and about as little, in which extensive changes were found in the abdominal arteries. I do not know any better reason for her alternating diarrhea and constipation.

#### PRE-OPERATIVE DIAGNOSIS

Abdominal malignancy.

#### SECOND OPERATION, MAY 29

Under local novocain a left rectus incision was made. The peritoneum was found to be half an inch thick. It was opened with some difficulty. Every portion of the viscera that could be exposed was studded with myriads of small white opaque areas which had more the appearance of tuberculosis than of carcinoma. There was very little fluid. Some of the adhesions were indurated. Some sections were obtained for pathological examination. The wound was then closed.



## PATHOLOGIC REPORT

A fragment of fat from the abdominal cavity showing on microscopic examination the histologic structure of caseous tuberculosis.

## FURTHER DISCUSSION

Dr. Cabot: Tuberculous peritonitis—I did not in the least suspect that. I do not know now how much it had to do with the death. I judge they did nothing about it at the operation. There was nothing particular to do. Abdominal tuberculosis does not ordinarily give rise either to diarrhea or to intestinal obstruction. One makes the diagnosis when there is ascites or when there are palpable masses, and not otherwise. We did not have any of those, so I do not think we could have been expected to make it.

What are we to anticipate postmortem aside from the arteriosclerosis which we know exists at the periphery and may assume exists elsewhere? I have no means of prophesying anything else. Of course it is a good guess that she had a bronchopneumonia, but there is no basis for that except her general condition and the commonness of bronchopneumonia near death.

A Student: How about Buerger's disease?

Dr. Cabot: I do not see any evidence of that because we have nothing in the other foot and because the case is not a chronic one. Unilateral disease is not common; and she is not of the race in which that ordinarily comes.

## CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD).

Tuberculosis of peritoneum.

Gangrene of right leg and foot.

DR. RICHARD C. CABOT'S DIAGNOSIS

Arteriosclerosis.

Bronchopneumonia?

DR. TRACY B. MALLORY  
ANATOMIC DIAGNOSIS

1. Primary disease.
  - Tuberculous peritonitis.
  - Tuberculous salpingitis.
2. Secondary or terminal lesions.
  - Pulmonary embolism.
  - Bronchopneumonia.
  - Thrombosis of right iliac artery and vein.
3. Historic landmarks.
  - Amputation of right leg.

The postmortem findings, I am afraid, will do very little to explain the clinical picture. We found a considerable amount that was not forecasted clinically, and no explanation for many of her symptoms.

She had a very extensive tuberculous peritonitis of the dry, adhesive type. This apparently arose from a tuberculosis of the Fallopian tubes, one of the common sources of tuberculous peritonitis in women. There was a chronic endometritis which may possibly have been tuberculous, although the histologic picture was not entirely characteristic. She did have a slight terminal bronchopneumonia. It was not tuberculous. There was not much tuberculosis in the lungs and none of it progressive. There were no intestinal ulcerations, no evidences of tuberculosis within the gut.

The iliac artery and vein on the side of the gangrenous leg were both completely thrombosed. The degree of arteriosclerosis at this point was very slight. A portion of the thrombus in the iliac vein had broken loose, and the final event, not suggested at all in the history, was a huge pulmonary embolus completely blocking both branches of the pulmonary artery.

I think there is no doubt that the gangrene of the right leg was due to the thrombosis of the iliac ar-

tery, but why that occurred I have no idea. There was no evidence of involvement of the wall of the artery by any tuberculous glands, and the degree of arteriosclerosis seemed quite insufficient to explain it.

Dr. Cabot: It seems to me a very interesting case. In acute cases we often find blocked arteries causing gangrene, the block due in the first place to arteriosclerosis with or without diabetes, and secondly to embolism. This clearly was not either, and there is no third that is recognized clinically in acute cases. It seems to me very important that we should remember this case as stretching our ideas about peripheral gangrene. Of course Buerger's disease and syphilis with syphilitic changes in the arteries are the other things that come into our minds, but those can be ruled out. There is a great deal to say about peripheral thromboses. Sometimes they are multiple and wholly venous, and sometimes do not lead to gangrene or infection and finally clear up.

DIAGNOSTIC FORUM  
DERMATITIS AND DROWSINESS

Case No. 15031, Case Records of Massachusetts General Hospital, from New England Journal of Medicine, January 17, 1929).

## CASE HISTORY

An unmarried English nursemaid thirty years old entered May 24 complaining of inflammation of the skin of one month's duration. She was very drowsy. The history was obtained in part from her sister, in part from the dermatologist who sent her in.

Six months before admission she began to have frequent head colds, to menstruate every two weeks, and to have pimples during catamenia. Since the onset she had been losing weight. These symptoms continued four months before she consulted a physician. Under his treatment she felt better for a while, and the skin condition improved. After two weeks, however, she felt weak, tired, and had no appetite. Her skin at that time was clear. Four weeks before admission she had generalized itching, weakness and loss of appetite and sleep, and an eruption of dark red pin-head sized spots on the arms, neck and face. Her temperature was 102°. A diagnosis of measles was made, though she had no cough or coryza. She was in bed for a week with fever, which gradually quieted down. She was up and about for a while. A week before admission she began to have considerable oozing about the neck and axillae. This persisted until May 12. A later history showed that on April 6, thinking she was pregnant, she had a curettage performed. From this time she felt very badly. She took medicine by mouth, but had no injections. Two weeks before admission she felt much worse, and entered another hospital. On admission there she presented a picture of a generalized exfoliating skin condition with marked crusting, oozing and swelling about the face, neck, arms, hands and axillae. Under treatment this gradually subsided to the dry exfoliative stage in which she entered the Massachusetts General Hospital. She had the same bronzed color which she had on admission here. She ran a temperature reaching 104° for the first week. Her elimination always remained low. She had nausea. For the past week she had had many loose movements and cramps in the abdomen. No microscopic blood or pus was found in the stools. She became more stuporous and passed smaller and smaller amounts of urine.

Clinical examination showed an emaciated and very drowsy woman lying in bed. The breath had a sweetish odor. The skin was dry and brownish throughout, and showed extensive exfoliation. The sclerae and conjunctivae were injected. The base of the right lung posteriorly showed diminished resonance, breath sounds and voice sounds. The heart showed no enlargement to percussion. The apex impulse was not seen or felt. The action was rapid. The sounds were not of good quality. The blood pressure was 95/65. The abdomen was distended and tympanitic. The liver edge could not be felt because of tenderness and a suggestion of spasm in the right upper quadrant. The upper edge of liver dullness was in the 7th space. Both labiae were swollen. All the extremities showed coarse tremor due apparently to weakness. The pupils were normal.

Urine: amount 5 to 35 ounces, specific gravity 1.012 to 1.013 at all of 6 examinations, cloudy and alkaline at all, a trace of albumin at all, red cells and leukocytes at three, loaded with both at one. Arsenic determination test on the urine showed no arsenic. Blood: 11,500 leukocytes, polymorphonuclears, 76 per cent, hemoglobin 60 per cent, reds 3,270,000. May 28 non-protein nitrogen 300, blood sugar 196 milligrams, blood chlorides 605 milligrams; May 31 non-protein nitrogen 230, blood sugar 117, creatinin 12.0 milligrams. Smear from throat negative. Stools negative.

Temperature 98° to 100.3° for the first two days; then 96.5° to 99°, with a terminal rise to 103.5°. Pulse 90 to 130. Respirations normal except for a terminal rise to 40.

After a subpectoral of 2000 cubic centimeters of glucose in saline the patient felt and appeared better. The pulse was stronger. She voided only once in the first two days. She was catheterized and an ounce of clear urine withdrawn. May 26 she was given a second subpectoral. She felt much better, was less drowsy, passed more urine and had less diarrhea. The blood pressure was 110/70. There was cavernous breathing above the level of dullness at the right base. A medical consultant suspected pathology at the right base and asked for x-ray examination. He found an apical systolic murmur and a systolic with a high pitched diastolic at the base, but found no evidence of pericardial effusion. X-ray examination showed some decreased radiability of the right base. The diaphragm however was visible. The costophrenic angle was clear.

June 4 the patient went into coma, was incontinent, and showed considerable twitching. A subpectoral of 1600 cubic centimeters was given with no subjective improvement. The coma deepened, the twitching increased, the temperature, pulse and respirations rose. June 6 she died.

The following discussions of this case were given by Group 1 before the Yavapai County Medical Society and Medical Officers of Fort Whipple, at Prescott, Ariz., at their meeting of February 11, 1930:

#### DR. C. E. YOUNT

We have found this to be a particularly interesting case and one the like of which we have not seen in our discussions before.

The chief symptom, the cause of admission, is a chronic skin affection of one month's duration. Six months is the time covered by the history. Death occurs one month after the acute dermatitis, which has its onset with fever.

In considering skin disease, we naturally ask

ourselves whether the case is of extraneous origin or whether it is something within. We are given a dermatogram or demograph in this wonderful organ, the skin, but at present I think none but the most skillful dermatologists can read all of them, and for use in general work some elucidation of these dermatograms should be had. In analyzing a condition of this kind, we know that in certain clinical pictures we may have very definite objective evidence of cause; may have urticaria due to scores of foods and other substances producing urticaria; the mechanism prevailing anaphylactic, but the agents are legion. On the other hand, we may have a single agent, such as arsenic or the bromides, which will produce several types of skin diseases, as erythema, vesicles, pustules, granulomas, pigmentation, etc. "If so many factors may produce a single objective phenomenon like urticaria, and one factor like bromide or arsenic produce so varied a series of phenomena, it is easy to grasp that concepts in clinical dermatology are subject to enormous excursions into the field of error, largely subjective, but it is worse when it is objective." What we need, then, in this case are facts and figures to determine the relationship between skin and general diseases. And facts and figures are precisely what we lack. For instance, toxic erythemas, arising as they do in sepsis and drug intolerance, as arsenic, indicate that our ignorance of the causation of these dermatoses depends entirely upon our inability to discover these facts.

Let us consider the two predominant types of skin diseases exhibited by our case: (1) Exudative inflammations, (erythemas with true exudation, true skin changes with inflammation), such as erythema multiforme, erythema scarlatinoides, pellagra, urticaria pigmentosa, pityriasis rubra Hebra, dermatitis exfoliativa, prurigo, lichen planus, psoriasis, eczema, dermatitis medicamentosa; (2) the pigmentation group. One dermatologist tells us, "So far as we know, there is but one skin pigment, and all shades of color of all human races, as well as of all normal individuals of the same race and nearly all abnormal pigmentations depend on quantitative, not qualitative, changes in this one pigment, which is normally most abundant over those surfaces of the body usually exposed to the sun and wind, in the eye-lids, certain hairy regions,—axillae, genitalia, linea alba, etc."

Under pigmentation skin disease we have:

(1) Addison's disease. We should like to classify our case in the Addison type of disease, certainly in the hypoadrenia group. We think hypoadrenia is a factor but our case doesn't furnish enough ashemia and is too acute to fit the usual picture of Addison's disease, although generalized bronzing of the entire body is found only in two groups,—arsenical poisoning and Addison's disease.

(2). Hemachromatosis, the bronzed diabetes of Osler; there is generalized bronzing, but this case is not in that class if the urine findings are correct.

(3). Pernicious anemias; usually lemon coloured, not bronze, but if much arsenic is used, the skin may be darker.

(4). Arsenic; dermatitis and intense pigmentation.

(5). Pellagra; district and seasonal, asthenia not marked (should be very marked in Addison's syndrome), the discolouration of the skin is strikingly symmetrical and delimited.

(6). Jaundice group; we would expect the sclerae to show jaundice and to find bile in the urine.

(7). Cachexias; tuberculosis, particularly tuberculous peritonitis, involving the chromataffin system and the intestines; carcinoma; malaria; syphilis.



(8). Eczema; scleroderma; melanosis.

(9). Neoplasms; especially benign forms; melanotic case; lymphoma; benign tumors of tubes and ovaries; pseudoleukemia.

(10). Graves disease; spots and patches.

(11). Pregnancies; chloasma patches.

(12). Gastro-intestinal disease; ulcer and dilatation.

(13). Cardiovascular; arteriosclerosis; chronic heart disease; nephritis.

Within these two groups of broad classification of skin disease we would try to fit our own case.

This young woman, six months previous to her death, noticed frequency of menstruation, frequent head colds, and began to develop acne. She continued with these symptoms, not doing much about them until after four months when she consulted a physician. She received treatment and seemed to improve; skin cleared up. Then, thinking she was pregnant, about April 6th she had a curettage and went down hill rather rapidly after that. Two weeks later she developed what seemed to be measles; there was temperature of 104, gradually subsiding in one week. Measles and scarlet fever have been known to intensify the symptoms of pellagra and, in view of the subsequent history of the skin disease, I cannot find any particular skin condition that will fit except pellagra, and there is nothing said about delimited or symmetrical outline over the body, so we will have to rule out pellagra.

Two weeks later there is the appearance of skin condition very different from the original one, also very different from the outbreak of "measles." At this time there is much in the case to refer it to either pellagra or Addison's disease, but it could go out of that bronzed class and fall easily into one of the others of bacterial origin, like tuberculosis or septicemia.

The fever ranges rather high at that time, 104 is the highest, and she developed the skin condition rather rapidly. There is moisture, exudative dermatitis, with moisture around the neck, face, axillae and arms. She was admitted to hospital with generalized bronzing. If that means what it says, it certainly points to Addison's disease, yet she is not asthenic and the condition is acute, not chronic as commonly found in Addison's. Pellagra is ruled out except the typhoid type when you may have almost anything and death is quick as in this case; but we can not fit pellagra into this case. She was given treatment with some arrest and drying of the skin but still had, when admitted to the Massachusetts General Hospital, a decided exfoliative dermatitis of some kind. Call it eczema if you will.—it is exfoliating, it is desquamating, it is true dermatitis with a generalized bronzing, our patient growing rapidly worse, with death in twelve days after admission to the Massachusetts General Hospital.

Dr. Allee will give the positive findings based on the facts and figures available, and our group diagnoses.

#### DR. GAIL D. ALLEE

You will remember, in reading this history, that there is nothing concerning the past history of the case. The information recorded was obtained from the family doctor and from her sister. Evidently there was nothing very striking or her sister would probably have known about it.

This case starts in with excessive menstruation, every two weeks, and a history of pimples during menstrual period. The next episode occurs seven weeks before admission, when she has a curettage because she thinks she is pregnant. About two weeks later she has a skin eruption, which is diagnosed as

measles. Two weeks later she has a terrific dermatitis of exfoliative type. In the physical examination, the interne describes perfectly some fluid in the right base, diminished breath sounds, diminished voice and resonance. The consultant upsets a diagnosis of fluid by calling for an x-ray, which reports that the costo-phrenic angle is clear. The shadow in the lower right lobe is evidently localized pathology in the lung. Could this have been tuberculosis that started off so quietly and quickly became so serious that the patient died? It seems impossible; there is no evidence of fever until along towards the last, no evidence of cough, expectoration, night sweats and other symptoms of tuberculosis. It certainly does not sound very probable that it could have been pulmonary tuberculosis.

The distended abdomen, tenderness and other abdominal symptoms directs our attention to the abdomen as a possible site of tuberculosis, but evidence of peritoneal involvement is not at all strong. If we could make that diagnosis it would help us with that bronzing of the skin, which is a very striking symptom in this case. Anything that irritates the chromaffin system may cause bronzing in the skin. That is where a diagnosis of tuberculous peritonitis would come in handy as explanation. It could not be Addison's disease; it is too acute and there is too much evidence of infection.

You will recall also that the liver dullness extended down to the seventh interspace, which is rather low, especially if she were a modern lady and did not lace tightly. This apparently small liver makes us wonder if this bronzing could have been deep icterus, accompanying an acute yellow atrophy of the liver. She had a curettage and possibly chloroform was used. She became decidedly worse about a week or ten days after the curettage. Chloroform is one of the etiological factors in yellow atrophy. The chief objection to such a diagnosis is that with acute yellow atrophy there is a generalized icterus; but in this case we are told that the sclerae are not yellow, they are spoken of as injected, which I interpret to mean more or less redness from enlarged blood vessels.

Let us dispose here of pernicious anemia. The blood picture indicates quite clearly a secondary and not pernicious anemia. We want to dismiss pernicious anaemia and if that is the diagnosis we will confess we are away off.

It is rather hard to give up arsenic poisoning until we reflect that arsenic would persist in the urine for months after the system is saturated with it.

In the laboratory reports everything indicates that we have a pair of kidneys that are not doing anything; they are clear out of commission; non-protein nitrogen 300, creatinin 12, which is out of reason if we are getting any service out of the kidneys; also there is blood in the urine. Whatever else she may or may not have, it is clear that she does have a nephritis.

We have a diagnosis of dermatitis exfoliativa already given and we think the history indicates that this woman's skin is a mirror for everything that happens to her. The excessive menstruation is probably due to an endometritis and on top of that, she has a curettage for suspected pregnancy. In all likelihood there was more or less infection or the absorption of toxins which stimulated the skin still further. Then the kidneys started with this nephritis, which grows worse and is reflected in the skin. Possibly that bronzing which occurs is due to some drug applied as external treatment. The nephritis is enough to account for all the abdominal symptoms, diarrhea, distention and cramps. The nephri-

tis can also account for an endocarditis, which we rather believe that she has. The consultant found some abnormal diastolic heart sounds. Outside of that there is very little evidence of endocarditis except that very low blood pressure, which may mean an accompanying myocarditis. Evidently there is something disturbing the heart muscle very seriously and we rather believe it is endocarditis. The findings in the lung we interpret as broncho-pneumonia. If our theory of endocarditis is correct, and we think it is possible, there might have been a lung abscess from embolus, or might possibly have been an infarct. It is not at all impossible that in the last few days of her life she may have been generally septic, and we will not be surprised if she shows a little peritonitis.

Our diagnosis is: Nephritis, glomerular  
Broncho-pneumonia  
Endocarditis  
Dermatitis exfoliativa  
Sepsis (doubtful).

The following discussions of the case were given before the Clinical Club of Phoenix, at their regular weekly Monday noon meeting:

#### DR. S. I. BLOOMHARDT

Concerning the dermatitis, I am more or less at a loss as my knowledge of skin lesions is even more unfortunate than my knowledge on some other medical and surgical subjects. Six weeks before admission, she had a curettment, thinking she was pregnant, and from this time on she felt very badly. Four weeks before admission, two weeks later in fact, she had a generalized itching, weakness and loss of appetite and sleep, and an eruption on the arms, neck and face, a temperature of 102° continuing for one week. A diagnosis of measles was made, but could this not have been a toxic erythema with the temperature continuing for a week, with itching, etc.? Two weeks before admission, she entered another hospital presenting a picture of generalized exfoliating skin condition with marked crusting, oozing and swelling about the face, neck, hands and axillae. This subsided under treatment and presents very much the picture of exfoliative dermatitis. The nausea and diarrhea could be associated with her extreme toxemia. There are a large group of toxic erythematous eruptions; in all these conditions, there is some evidence to support the view that a hemolytic streptococcus may play a part in the causation. The organism has actually been recovered and grown in pure culture from some of the lesions. In a large percentage of acute nephritis cases there is a history of tonsillar trouble, dental sepsis or other infectious foci; also, the causative toxin may be medicinal or metabolic. Certainly, the most frequent causative agent in acute or subacute nephritis, especially the acute glomerular nephritis has something to do with the various strains of streptococcus. Just in what manner this organism produces the lesion we do not know as no evidence has been obtained to show that the streptococcus causes the nephritis by actual invasion of the kidney, for blood cultures and urine cultures were negative. Some John Hopkins workers put forth the theory that the "streptococci produce so-called filtrates of considerable potency and that it seems possible that such toxins liberated by the growth of streptococci and eliminated through the kidney might cause glomerular nephritis in patients rendered highly susceptible in some way to these toxins." The throat culture was negative, she had had a curettment and from this time on, she felt badly and ran a temperature. We

have mention of both labia being swollen, but no mention of edema elsewhere. There is a possibility of her having an infected uterus, streptococci, although if such were the case, I believe more mention, with all the studies on the patient, would be made of it.

A patient with extreme drowsiness, breath has a sweetish odor, heart which is rapid, muscle sounds of not good quality, possibly extremely toxic, a blood pressure of 95/65 (this rather does not seem so much in harmony with the rest of the picture, unless B. P. taken at a time of extreme toxic state of heart and laxity of blood vessels), urine ranging in amount from 5 to 35 ounces, a specific gravity of 1.012 to 1.013 at all of six examinations, no trace of albumin, red cells and leucocytes at three, loaded with both at one. No arsenic in urine. A marked anemia, non-protein nitrogen from 300 to 230 mg. Blood sugar 196 and 117 reg. Blood chlorides 605 mgs. Creatinin 12 mgs. Temperature 98 to 100-103 rather a picture of acute nephritis with very severe impairment of renal function, extreme retention and uremic poisoning when the urine becomes approximately of the same molecular concentration as the blood, whose specific gravity is about 1.010, and a figure very close to this is the highest that can be attained by a patient with severe impairment of renal function. As water excretion becomes more and more impaired the minimum also approaches this figure and the patient, as in this case, may go on with a specific gravity between 1.008 and 1.012. This patient evidently could no longer raise the urinary concentration nor could she regularly raise the volume. A nonprotein nitrogen of 300 mg. on May 28th or 230 three days later is excessively high, as is a creatinin of 12 excessively high. It is my understanding that cases of definite renal involvement showing a nonprotein nitrogen of 150 mg. or more per 100 cc. of blood or a creatinin value of over 5 mg. per 100 cc. of blood should always put us on our guard as to the prognostic seriousness of cases showing such figures. The laboratory tests were made after two subpectoral injections of glucose in saline were given after which the patient felt much better, was less drowsy, passed more urine and had less diarrhea. A dullness at the right base, x-ray showing some decreased radiability, would mean a terminal pneumonic process. In many of these cases of uremia, the buccal mucous membrane is red, the tongue is enlarged and covered with a grayish, sticky coating; there is nothing of this mentioned in the physical findings. There is no mention of a blood diazo test which I believe is a valuable aid in the diagnosis and prognosis of renal insufficiency. Blotner & Firtz tell us "it is a test of practical value, being a quick step toward a differential diagnosis between uremic coma and coma of other than renal origin; it is a test of clinical significance as its presence is always an ominous sign, suggesting a short span of life for the patient."

Evidently, arsenic poisoning from some source was thought of as we have a laboratory report to the effect that arsenic determination test on the urine showed no arsenic. It is an etiological factor in nephritis and in the genesis of certain eczemas, but I believe when the cause, it can be demonstrated in the urine.

#### Diagnosis:

Uremic poisoning;  
Acute nephritis;  
Terminal basal pneumonia;  
Toxic erythema, exfoliative dermatitis.



## DR. W. WARNER WATKINS

According to the history of this patient, the chief symptoms in the order of their appearance were head colds, menorrhagia, pimples, loss of weight, loss of strength, pruritus, insomnia, loss of appetite, fever, dermatitis, diminishing urine, gastro-intestinal upset, drowsiness.

The loss of weight, strength and appetite, the fever, the dermatitis with itching, the diminishing urine and the drowsiness would seem to be the suggestive symptoms. If we are going to attempt to explain all the symptoms on the basis of a single diagnosis which we should at least attempt, the dermatitis seems to be the best symptom to analyze.

The itching varieties of dermatitis practically rule out some very common varieties, but we should not be too sure of this.

Any dermatitis requires that syphilis be ruled out; though this woman was unmarried, yet she had sexual exposure, because she feared pregnancy and was curetted. Aside from this, we have little to suggest syphilis.

The only other non-itching dermatitis which occurs to me as possible would be pellagra. While the distribution of the lesions would be atypical for pellagra, we do have such cases. She has the insomnia, drowsiness, and gastro-intestinal upsets which we expect in pellagra, but without going into all the reasons for the decision, I have rejected pellagra as a diagnostic possibility, with an uncomfortable feeling that I may be wrong.

Of the itching varieties of dermatitis, the parasitic, dermatosis (eczema, mycosis fungoides, lichen, etc.), cholemic, phramaceutic and neuropathic can all be fairly well ruled out, with a reservation about mycosis fungoides and chronic arsenic poisoning. That leaves us the allergic type, the azotemic, the diabetic, and any unknown. On the basis of the history, we could have either of these.

The clinical examination brings us the symptoms of sweet breath, some lung symptoms, feeble heart action, low blood pressure, distended abdomen tremor.

The clinical examination does not rule out either of the three possibilities mentioned, but adds another. The low blood pressure, feeble heart action without evidence of heart disease, the tremor of extremities bring into the picture Addison's disease.

The laboratory findings add the information that there is a small output of low specific gravity urine, with trace of albumin, no mention of glycosuria, a secondary anemia, very marked retention of nitrogen products in the blood, with slight excess of sugar in the blood.

Without discussion of the reasons therefor, will at this time drop the allergic type of dermatitis from consideration; it would take a long time to tell just why, but there are reasons good enough for me.

I should say that we would need now to differentiate between three possibilities,—diabetes, nephritis with uremia, and Addison's disease.

For diabetes, the sweetish odor of breath, the loss of strength, the fever, the drowsiness and terminal coma, slight excess of sugar in the blood, the aggravated type of dermatitis with bronzing, the low B. P., the improvement after glucose are all in accord. Against diabetes will be the absence of polyuria, the low sp. gr. of urine, the apparent absence of glycosuria, and the relatively low blood sugar in a patient shortly to die in coma. All told, I vote against diabetes.

Azotemia from nephritis is supported by gastro-intestinal symptoms with diminishing urine, the edema, the urinary findings of small output through

low specific gravity, trace of albumin, very high nitrogen retention, remaining 230 mgm. after sub-pectoral injections. There is certainly an azotemia whether or not this is cause of the symptoms or death. The drowsiness with coma could be explained by a terminal uremia. Against nephritis is the fever, the low blood pressure, the weak heart action, and the very aggravated type of dermatitis, with bronzing.

For Addison's disease, we have the necessary classical symptoms of asthma, anemia, feeble heart action, low B.P., intestinal disturbance, bronzing of skin, etc. In fact, there is hardly any symptom presented which Addison's disease will not explain, except the extreme dermatitis. The intermittent character of the disease, also is in accord with Addison's as are the terminal symptoms. The symptoms which are not in accord are the laboratory findings, the very high nitrogen,—although there is an increase in Addison's. There is said to be a hypoglycemia in Addison's and this patient has a slight excess of sugar.

Having reached the end of my allowance of time for this case, without further, discursive straddling, will place my bet on Addison's disease, with an azotemia from accompanying nephritis. The lung findings will lay to hypostasis from the feeble circulation.

Diagnostic conclusions on this case by members of the Club were as follows:

Dr. H. Randolph—Uremia coma; chronic nephritis.

Dr. V. Randolph—Addison's disease.

Dr. F. C. Jordan—Nephritis.

Dr. T. T. Clohessey—Visceral and skin tuberculosis.

Dr. J. M. Greer—Diabetes; nephritis; dermatitis exfoliativa.

Dr. O. H. Brown—Nephritis, subacute; subphrenic abscess; allergic dermatitis.

Dr. A. C. Kingsley—Nephritis.

Dr. Fred Holmes—Addison's disease; diabetes.

Dr. R. J. Stroud—Nephritis; dermatitis exfoliativa.

Dr. F. J. Milloy—Chronic amebiasis; abscess of liver.

The following discussions of the case were given at the Clinico-Pathological Conference at the Massachusetts General Hospital:

## DR. RICHARD C. CABOT

I do not see how we can tell about the measles. It does not sound like it in the absence of any catarrhal symptoms.

The outstanding facts are the skin condition, which sounds like an exfoliative dermatitis of the type we often get after a dose of salvarsan or other poisons, plus an increasing drowsiness, with deficient excretions. I have not paid any special attention to the brown color of the skin because that is so common in cases of this dermatitis. The blood pressure was notably low, which with the brown color, which I have just said is of no importance, might make us think of Addison's disease. We must watch for other evidence of this as we go on.

They are looking carefully as to the size of the liver in relation to the possibility of an acute hepa-

titis, which often goes with exfoliative dermatitis as a result of an overdose of salvarsan, but ordinarily accompanies a jaundice which has not as yet been mentioned and I suppose was not there.

Of course we cannot tell much about the statements as to the urine because we do not know whether these are catheter specimens. The apparent fixation of gravity is important, although fixation at that point is not so important as at a lower point.

Arsenic was not being excreted at this time, which only shows probably that it had not been given very recently.

A non-protein nitrogen of 300 certainly ought to mean something. That is not healthy. The creatinin ought to be from one to two. It is greatly increased, as is the non-protein nitrogen.

She was there two weeks. She had a good deal of normal temperature. I doubt whether the breathing was cavernous. That is just a question of fact. It does not seem likely there was a cavity there, and we do not get the cavernous breathing under other conditions.

From the x-ray report there probably was no fluid in the pleurae.

#### DIFFERENTIAL DIAGNOSIS

This is the picture which for so many generations has been known as uremia. We do not know today just what we mean by uremia from the pathological point of view, but we still continue to use the term for this clinical syndrome with the implication of a nephritis as its cause. It seems to me we have no reason to doubt the diagnosis of a severe nephritis, though we have a low blood pressure. The only thing in my mind is the lesion we had a week or two ago, nephrosis or tubular nephritis, which can perfectly well come in a case presenting the facts that are given here. Nephrosis does not usually raise the non-protein nitrogen, and the fact that very is so very high makes me think that the glomeruli are affected,—that it is not merely a tubular process.

I suspect then, that the patient had taken some poison, perhaps arsenic in the form of salvarsan, that led to an exfoliative dermatitis and nephritis. I do not think we have any good evidence of hepatitis, although that is possible.

What is this lesion at the base of the lung? I do not know, unless it is a pneumonia. I do not know just how that plate corresponds in time with the temperature.

So it seems to me that some obstructive type of kidney lesion ought to be found, and I believe it will not be nephrosis but nephritis. That is, it will not be confined to the tubules. We have no evidence of a terminal pneumonia on the right. That is all that I can say.

A Student: Acute endocarditis?

Dr. Cabot: I am glad you brought that up. There is a high-pitched diastolic murmur at the base. That ought to be due to a definite valvular lesion, acute or chronic. We do have functional diastolic murmurs, but ordinarily with very much more anemia than there is here. They occur chiefly in intense anemia. This is not intense, only moderate, and I do not believe it is a functional murmur. The question is whether this report is a mistake. But if the murmur was really there I think it is a case of acute or chronic lesion on the aortic valve. It looks more like an acute lesion.

A Student: Would you consider tuberculosis,—tuberculosis of the kidney and adrenals, thereby producing Addison's disease?

Dr. Cabot: I have never seen that combination. I

do not think tuberculosis of the kidney ever gives this urinary picture. But I think we ought to consider Addison's disease a little further. We diagnose Addison's disease on the basis of changes in the skin, low blood pressure, and certain gastric and cardiac symptoms, especially fainting and vomiting. Pigmentation inside the mouth is the most reliable physical sign. Here we have nothing except pigmentation and one rather low blood pressure, the other being within normal limits. And we have good reason to explain the pigmentation of the skin from the other skin lesion which she has. So I should say I do not think we have to consider tuberculosis of the adrenal here.

#### INTERPRETATION OF X-RAY

The lung findings suggest consolidation rather than fluid.

#### CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Dermatitis exfoliativa.

Uremia.

#### DR. RICHARD C. CABOT'S DIAGNOSIS

Nephritis, probably due to arsenic.

Dermatitis exfoliativa.

Possibly terminal pneumonia.

Possibly acute or chronic endocarditis of the aortic valve.

#### DR. T. B. MALLORY

#### ANATOMIC DIAGNOSIS

1. Primary disease.  
Interstitial nephritis.
2. Secondary or terminal lesions.  
Interstitial pancreatitis.  
Dermatitis exfoliativa.  
Infarcts of the spleen.  
Bronchopneumonia.
3. Historical landmarks.

Chronic inflammation of the duct of Wirsung.

This case was an even rarer type of renal lesion than the nephrosis which was seen recently at the Brigham Hospital. It was a generalized interstitial nephritis, a disease that unquestionably was very much commoner twenty years ago than it is now. The postmortem records at the City Hospital show from 1900 to 1910 a number of cases every year of interstitial nephritis, almost invariably in cases convalescing from scarlet fever. I believe I am correct in saying that in the last fifteen years there has not been a case at the City Hospital. I am sure that in ten years there have been no cases here. The condition occasionally does occur in cases in which scarlet fever cannot be proved. It is however rare, and I think that the suggestion that the original rash may have been scarlatinal is given extra strength at any rate by the character of the nephritis here, although we are not able to prove it.

The kidneys were very large, the pair weighing together 600 grams. The capsules stripped very readily, leaving a smooth, somewhat grayish-red surface with an appearance suggesting a diffuse infiltration, very much the type that is seen in a leukemic infiltration of the kidneys. Microscopic examination showed negative glomeruli, for the most part negative tubules, and an extremely diffuse infiltration of lymphocytes, plasma-cells and a few eosinophiles. Although the tubules did not show much it is not fair to say they were entirely negative. In some places there are leukocytes present in the lumina, and one also finds rare mitotic figures in the epithelial cells, signifying regeneration and presumably previous injury to the tubular cells. The exact mechanism of the production of an interstitial nephritis is still undecided. Some authorities



claim it starts about the blood vessels, others that it represents a healing stage, perhaps of a tubular nephritis. Some of the findings here were suggestive of that point of view. I think we can definitely rule out a healing bichloride of mercury poisoning on account of the large amount of calcification that develops in such cases.

The heart was very small, weighing only 210 grams, the valves entirely negative.

There was a bronchopneumonia at the base of the lungs. The liver was large and showed a very marked degree of fatty infiltration rather similar to what is often seen in cases of nephrosis, though by no means characteristic of that condition.

There were two small infarcts in the spleen. The pancreas, surprisingly enough, showed also a very marked interstitial pancreatitis.

No further chemical examinations were made on the case, as I had been assured that arsenic and mercury had been ruled out.

Dr. Cabot: As you put all the facts together here, what do you think was the relation of this skin condition to the kidney condition?

Dr. Mallory: I think it was really very suggestive that she may have had a scarlet fever. I am unable to explain the exfoliative dermatitis. That is of course very suggestive of arsenic, but unquestionably can occur without it.

Dr. Cabot: This type of nephritis is not the type Dr. Councilman described twenty years ago as "acute interstitial nephritis?" That was in connection with diphtheria as well as scarlet, wasn't it?

Dr. Mallory: The majority of cases follow scarlet fever, though cases do occur in diphtheria, erysipelas or any acute disease such as measles in which septic, particularly streptococcic complications develop. The condition has not been reported following any nonbacterial toxemia to my knowledge.

Dr. Cabot: I still feel that the skin lesions here described are extremely unlike scarlet fever, though I have no proof that she did not have it. Of course Dr. Mallory is on perfectly safe ground when he says people can have scarlet fever without a rash. That has been proved in experimental scarlet fever. Therefore the absence of rash is not against scarlet fever.

## MINUTES OF THE MEETING OF THE THIRTY-NINTH ANNUAL SESSION OF THE ARIZONA STATE MEDICAL ASSOCIATION, HELD IN PHOENIX, APRIL 24 TO 26, 1930.

### MEETING OF THE COUNCIL

Meeting of the Council was called by the president, Dr. S. H. Watson, to meet at 8 p. m., April 23rd, at the Hotel Westward Ho. Council members present were: Dr. S. H. Watson (president), Dr. J. M. Greer (president-elect), Dr. D. F. Harbridge (secretary), Dr. C. E. Yount (treasurer), Drs. W. C. Todt, C. A. Thomas and W. W. Watkins (councilors).

Minutes of the previous Council meeting were read and approved.

Dr. W. C. Todt, councilor for the Northern District, reported that he had held a council district meeting in Winslow during the year.

Dr. C. A. Thomas, councilor for the Southern District, reported that, so far as he knew, only Pima County was holding regular meetings; that he had some matters regarding Santa Cruz County to report which he would hold until new business was in order.

Dr. W. W. Watkins, councilor for the central dis-

trict, reported that only Maricopa County was holding regular meetings in his district.

Dr. Watkins was asked for a report on the official journal—Southwestern Medicine. He made a verbal report, with the explanation that he was not the representative of this Association on the journal staff, that place being held by Dr. O. H. Brown as associate editor and by Drs. D. F. Harbridge and C. E. Yount, as members of the Board of Managers. He commended the work of Dr. Brown very highly. Dr. Todt suggested that the names of the various county societies, with their members, be published in the journal at least once a year, for reference.

Dr. C. E. Yount made recommendation that the chairmen of the Committees on Public Welfare and Medical Defense be made regular members of the council, and that amendments to the Constitution providing for this be offered.

The report of the Treasurer, Dr. C. E. Yount, was presented by him, with explanations of method of handling funds; this report had been audited by the Auditing Committee appointed by the president. The report is appended to these minutes.

Report of the Secretary, Dr. D. F. Harbridge, was read and approved (see below.)

Report of the Committee on Medical Defense was presented for the information of the Council (see below).

Under the head of New Business, the application of a group of doctors in Santa Cruz County for a charter as a constituent county society of the Association, was presented. Dr. Harbridge, Dr. Thomas and Dr. Watson stated that they had visited the county, that the old society was entirely inactive, and recommended revocation of its charter, and the granting of a new charter. After considerable discussion on constitutional points, it was moved and seconded that the new organization in Santa Cruz County be accepted as the constituent organization from that county. This motion was carried. It was then moved and seconded that the Council accept and approve the bylaws of the new Santa Cruz Medical Society, as presented. This motion carried.

Council adjourned.

### HOUSE OF DELEGATES

First meeting, Thursday, April 24.

Called to order by the president. Members of the Council present were Drs. S. H. Watson, J. M. Greer, D. F. Harbridge, C. E. Yount, C. A. Thomas, W. C. Todt, W. W. Watkins. Delegates present as follows: Coconino County, Dr. F. P. Manning; Graham County, Dr. R. C. Dryden; Cochise County, Drs. R. B. Durfee and Robt. Ferguson; Gila County, Drs. C. I. Irvin and C. Gunter; Maricopa County, Drs. Win Wylie, H. T. Bailey, H. B. Gudgel, J. J. McLoone, R. T. Franklin, G. M. Brockway; Yuma County, Dr. H. A. Reese.

Minutes of previous meeting were read and approved.

President appointed as the Committee on Necrology, Drs. Todt, Looney and Manning.

Committee on Public Welfare reported by Dr. Clarence Gunter, the chairman. The matter of the Basic Science Law had been considered by them, but they were as yet not satisfied about the desirability of this legislation in Arizona. It was moved and seconded that the matter be left with the committee and that they continue their work until next January. Motion carried.

Committee on Medical Defense reported through Dr. D. F. Harbridge, who read the chairman's report, and the communication from the Association's attorneys, which are appended hereto. This report was approved by motion.

Dr. Watkins presented a proposed amendment to the Constitution, Art. VI, to make it read as follows: "The Council shall be the Board of Trustees of this Association and shall be the Finance Committee of the House of Delegates. It shall consist of the councilors, the president, the president-elect, the retiring president, the secretary, the treasurer, and the chairman of the Committee on Medical Defense. Five of its members shall constitute a quorum."

He also presented an amendment to Chap. VII, Sec. 3 of the By-laws by the addition of the phrase, "the president of the Association to be its chairman."

Also an amendment to Chap. IX, Sec. 3 of the By-laws, by inserting the phrase "licensed to practice medicine in Arizona," so that it shall read, "Each county society shall judge of the qualifications of its members, subject to review and final decision of the Council of the State Association. Every reputable physician, legally licensed to practice medicine in Arizona, who does not practice nor profess to practice sectarian medicine and who is a bona fide resident of the same county, shall be eligible to election to membership."

Adjourned.

Second meeting of the House of Delegates,  
Friday, April 25, 9 a. m.

Vice-president, Dr. H. A. Reese, presiding. Following delegates were present: Dr. Dryden (Graham), Drs. Gunter and Bacon (Gila), Drs. Franklin and Stroud, (Maricopa). Members of Council, Drs. D. F. Harbridge, C. E. Yount, W. C. Todt, C. A. Thomas.

Committee on National Legislation submitted the report of its representative, Dr. R. J. Stroud (appended below). It was moved and seconded that the report be accepted and published.

Dr. Stroud suggested that a committee be appointed to draft a narcotic law for Arizona. It was moved and seconded that the matter be referred to the Committee on Public Welfare, with instruction to the president to request a call meeting to receive its report. Carried.

It was moved, seconded and carried that a committee be appointed to work out the organization of a Woman's Auxiliary for the State Association.

With regard to the amendments to the By-Laws introduced the previous day (vide supra), the amendment to Chap. VII, Sec. 3, referring to the Committee on Public Welfare was not adopted. The amendment to Chap. IX, Sec. 3, referring to the qualifications for members of county societies was adopted.

Dr. Yount introduced an amendment to Art. VI of the Constitution, adding to the end of that article the clause "the chairmen of the Committees on Public Welfare and Medical Defense," which will make these chairmen members of the Council.

Dr. Stroud brought up the matter of a medical booth at the State Fair, and it was moved, seconded and carried that the State Health Officer have the approval of the House of Delegates in this matter.

Adjournment.

Open Meeting of the House of Delegates,  
Saturday, April 26, 9 a. m.

President, Dr. J. M. Greer, presiding.

Mr. George Mauk, of the Legislative Board of the Arizona Peace Officers' Association, spoke on the need of a law governing the sale of narcotics in Arizona.

It was moved and seconded that the Arizona State Medical Association extend a vote of thanks to the Medical Defense Committee for their splen-

did work, and also to Drs. Win Wylie and W. O. Sweek for their work in special cases. Carried.

It was moved and seconded that the Association adopt a suitable resolution expressing the sentiments of the Association toward Dr. Whitmore and his family, and their appreciation of his great services to medicine and the public good. Motion was carried, and the president appointed Drs. Wylie, Bacon and Watkins as this committee.

The Committee on Necrology submitted its report (see below), which was adopted, and the president requested the Association to stand a moment in silence out of respect for the members who have passed away during the year.

The president announced the appointment of Dr. R. J. Stroud as delegate to the American Medical Association, with Dr. Mayo Robb as alternate.

The election of officers resulted in the selection of the following:

Dr. Harry A. Reese of Yuma—President-Elect.

Dr. W. C. Todt, Kingman,—Vice-President.

Dr. D. F. Harbridge, Phoenix—Secretary.

Dr. C. E. Yount, Prescott—Treasurer.

Dr. C. A. Thomas, Tucson—Councilor of the Southern District.

Dr. F. P. Manning, Flagstaff, Councilor of the Northern District (to succeed Dr. W. C. Todt, resigned.)

Dr. R. J. Stroud, Tempe—National Legislative Committeeman.

Drs. Smelker and Gustetter extended the invitation of Nogales for the 1931 meeting. Upon motion, this invitation was accepted.

A vote of thanks was extended to the Maricopa County Medical Society for their fine entertainment of the 1930 meeting.

Adjournment sine die.

#### SCIENTIFIC SESSIONS

Scientific Session was opened on Thursday forenoon, at ten o'clock, with president, Dr. Samuel H. Watson of Tucson, in the chair. Invocation was given by Rev. Fr. Vaughn of Brophy College. Address of Welcome was given by State Senator Celora M. Stoddard, of Phoenix, representing Governor Phillips. The President-elect was then introduced—Dr. Joseph Madison Greer of Phoenix, who delivered his address on "Our Duty as Doctors to our Patients." (This address was published in the May issue of this journal.)

The next paper was presented by Dr. C. E. Yount of Prescott, on "Detailed Study of Tissue from Abortions." Specimens of moles and many lantern slides were shown. Discussion was opened by Dr. F. B. Sharp of Phoenix, with participation by Drs. Thigpen (Jerome), Reese (Yuma), Bacon (Miami), being closed by Dr. Yount.

There followed then the symposium on Industrial Surgery, which continued into the afternoon, as follows:

"Arthritis and Its Relation to Industrial Medicine," by Drs. John E. Bacon and Wm. B. Watts of Miami.

"Pneumoconiosis," by Drs. John W. Flinn and Robert S. Flinn, of Prescott.

"Back Injuries," by Dr. A. C. Kingsley, Phoenix.

"Infections of the Hand," by Dr. Charles N. Plousard of Phoenix.

"Organic Internal Splinting of the Fractured or Detached Olecranon," by Dr. Wm. Lyle Bell of Oakland, Calif.

"The Relation of the Medical Fraternity to the State Industrial Commission," by Mr. John Taheney, of the Arizona State Industrial Commission, Phoenix.



The discussion of this group of papers was opened by Dr. Samuel H. Watson (Tucson), and continued by Dr. Far-ington (Boulder, Colo.), Dr. W. W. Wilkinson (Phoenix), Dr. W. W. Watkins (Phoenix), Dr. C. R. Swackhamer (Superior), Dr. R. H. Thigpen (Jerome), Dr. C. A. Thomas (Tucson), Dr. C. E. Irvin (Miami), Dr. E. Payne Palmer (Phoenix), Dr. John E. Bacon (Miami), and Dr. Robert S. Flinn (Prescott).

The scientific session of Friday, April 25, was given over to a Symposium on Chest Diseases, which occupied the forenoon and afternoon sessions as follows:

"Trends in Treatment of Pulmonary Tuberculosis," by Dr. Allan K. Krause, Tucson.

"Management of Artificial Pneumothorax," by Drs. Samuel H. Watson and C. S. Kibler, Tucson.

"Intestinal Tuberculosis from the Standpoint of the Roentgenologist," by Dr. John L. McKnight, Tucson.

"The Heart in Pulmonary Tuberculosis with Preliminary Report of Electrocardiographic Study in One Hundred and Four Cases," by Dr. W. R. Leverton, Tucson.

The discussion of this group of papers was opened by Dr. Victor Randolph (Phoenix), Dr. Howell Randolph (Phoenix), Dr. H. L. Goss (Phoenix), continued by Dr. W. W. Wilkinson (Phoenix), Dr. S. H. Watson (Tucson), Dr. Robert Flinn (Prescott), Dr. H. A. Reese (Yuma), Dr. C. A. Thomas (Tucson), Dr. C. S. Kibler (Tucson), and Dr. J. L. McKnight (Tucson).

At the Clinical Luncheon on Friday, Dr. Ralph Homan, fraternal delegate from Texas, spoke on "Diagnosis of Tuberculosis in Childhood," (published in this issue), and Dr. Allan K. Krause continued his discussion on "Trends in Treatment of Pulmonary Tuberculosis."

The scientific session of Saturday was opened by a paper on "Pulsion Diverticulum of the Esophagus" by Dr. Charles T. Sturgeon of Los Angeles, with lantern slides. Discussion was opened by Dr. H. T. Bailey (Phoenix), continued by Dr. J. E. Bacon (Miami) and Dr. E. Payne Palmer (Phoenix).

The second paper was on "The Explanation of Symptoms" by Dr. Francis M. Pottenger of Monrovia, Calif.

At the Clinical Luncheon of Saturday, Dr. Pottenger was the speaker, on the subject of "Visceral Pain."

At the beginning of the afternoon session, Mr. Charles R. Holton, attorney for the Association, gave a report of last year's Medical Defense activities. The gist of his report is contained in a communication which is appended to the Report of the Medical Defense Committee (see below).

The next paper was on "Fever" by Dr. Harry A. Reese, of Yuma. Discussion was opened by Dr. Robert Flinn (Prescott), continued by Dr. Willard Smith (Phoenix) and Dr. W. W. Wilkinson (Phoenix).

Dr. C. C. Tiffin of Seattle, who was to present the next paper on "Differential Diagnosis and Medical Treatment of Goitre" was unavoidably detained by emergency operation upon his daughter. His regrets were telegraphed to the Association. In lieu of this, Dr. S. I. Bloomhardt talked on this subject and Dr. E. Payne Palmer of Phoenix presented the "Surgical Treatment of Goitre." General discussion was participated in by Dr. Charles T. Sturgeon, (Los Angeles), Dr. Smith (Pasadena), Dr. Kimball (Yuma), Dr. Frank Milloy (Phoenix) and Dr. F. M. Pottenger.

The final paper on the program was on "Volkmann's Ischemic Contracture" by Dr. A. C. Carlson

of Jerome. Report of a case with moving pictures, made by the author were shown. The discussion was opened by Dr. Edgar Brown (Phoenix), participated in by Dr. L. P. Palmer (Phoenix) and Dr. C. R. Swackhamer (Superior.)

A special moving picture film of gall bladder disease was shown.

The social entertainments included smoker for the men on Thursday evening, while the ladies were entertained at a bridge party; dinner dance Friday evening; luncheon on Friday for ladies; golf tournament for men.

## REPORTS OF OFFICERS AND COMMITTEES

### SECRETARY'S ANNUAL REPORT APRIL 1930.

The usual routine business of the office has been conducted. Correspondence, memberships, visit to County Society and many varied details.

One visit was made to the Santa Cruz County Medical Society to help the members to a better and more active organization. The Secretary attended the Annual Conference of State Secretaries at Chicago, Nov. 15, 1929. There was discussed at this meeting much of interest to each component State Association, the key note of which was more intensive work and a better cohesive association between the state and county organizations. The national and state organizations are no better than the conjoined efforts of the county societies make it. Proper support and enthusiasm of state journals is to be encouraged. Industrial medicine received a cordial discussion.

The lamp and screen which you ordered purchased one year ago have been secured.

Membership in good standing April 1st, 1930:  
Dues received (since April 1929 meeting).....\$3085.00  
Expenses for which vouchers were signed.....  
General Expenses ..... 1393.00  
Medical defense ..... 2216.50

Our finances are in somewhat better condition than one year ago; yet there is still room for great improvement.

It is the opinion of the secretary, based on observation of the work of the various county societies that each should exert a greater effort in the interests of organized medicine.

D. F. HARBRIDGE,  
Secy. State Med. Assoc.

### REPORT OF THE TREASURER

#### TO THE COUNCIL AND HOUSE OF DELEGATES, ARIZONA STATE MEDICAL ASSOCIATION:

I present herewith Treasurer's report for the year ending April 19, 1930. (Books closed this date.)

#### GENERAL STATEMENT

Total Receipts All Sources:			
Balance General Fund April 13, 1929.....	\$	1,891.94	
Dues 1929, 12 members at \$10	\$120.00		
Dues 1930 238 members at \$12.50	\$2,975.00	3,095.00	
Refund, one member bad check	12.50		
Donation (Troth)	10.00		
Defense Fund, Balance in Savings Bank			
April 13, 1929	\$1,294.40		
Interest and Coupons	259.08	1,553.48	
Coupons, Bonds, Dec. 1929, Deposited in			
General Fund	259.08		
United States Bonds	10,000.00		
TOTAL receipts all sources	\$16,775.36		
TOTAL disbursements all sources	2,968.67		
TOTAL Balance all Funds		\$13,806.69	

#### ANALYSIS AND STATEMENT BY FUNDS

1. General Fund:			
	Receipts		
Balance from 1929		\$	1,891.94
12 members pro rated at \$4.00			
General Fund	\$	48.00	
238 members pro rated \$6.50			
General Fund	\$1547.00	1,595.00	
250 members pro rated at \$6.00			
Defense Fund		1,500.00	

Refund, one member, bal check.....	12.50
Donation (Troth).....	10.00
Transfer from Defense Fund July 3, 1929.....	500.00
Coupons, Bonds, deposited in General Fund Dec., 1929.....	212.44 \$ 5,721.88
Disbursements, duly authorized—	
Paid from General Fund:	
Dr. John Alexander, traveling expenses.....\$	225.00
Louise Pearson, stenographer, Annual Mtng	125.00
Wm. C. Todt, expenses Council meeting	
Flagstaff.....	6.50
Martindell, Horne & Co., Treasurer's Bond.....	30.00
Sloan, Holton, McKesson & Scott, Medical Defense.....	1,305.15
R. J. Stroud, reimburse for telegrams.....	5.04
John W. Plinn, reimburse for telegrams.....	2.82
W.W. Watkins, reimburse for telegrams, etc.....	20.25
Bank of Arizona, Safety Deposit Box.....	4.00
Southwestern Medicine, 245 members.....	490.00
Sloan, Holton, McKesson & Scott, Medical Defense.....	150.00
Louise Pearson, reporting three Yavapai meetings.....	45.00
D. F. Harbridge, Secretary's office expense.....	60.00
Louise Pearson, reporting two Yavapai meetings.....	30.00
A. C. Taylor Printing Co., Membership cards 1930.....	3.50
D. F. Harbridge, reimburse for purchase record book.....	4.00
Sloan, Holton, McKesson & Scott, Medical Defense.....	240.00
Maricopa Medical Society, reimburse for lantern, etc.....	115.00
St. Louis Button Co., Buttons State Meeting.....	34.91
Bank charge, bad check.....	12.50
Louise Pearson, reporting four Yavapai meetings.....	60.00
	\$ 2,968.76
April 19, 1930, Transferred to Defense Fund.....	1,550.12

April 19, 1930, Balance in General Fund in  
in Bank of Arizona ..... \$ 1,203.09

## 2. Defense Fund:

Receipts	
Balance in Savings Bank April 13, 1929.....	\$ 1,294.40
Interest June 30, 1929.....	25.88
Interest December 31, 1929.....	20.64
Coupons, Bonds, deposited in Defense Fund, June, 1929.....	212.56
250 members pro rated at \$6.00 for Defense Fund.....	1,500.00
Loan to General Fund refunded.....	500.00
Due from General Fund 1929 refunded.....	1,239.27
TOTAL Receipts Defense Fund.....	\$ 4,802.75
Expenditures	
Loan to General Fund July 3, 1929.....	500.00
Cost of Medical Defense for current year.....	1,699.15
Balance Defense Fund, Yavapai County Savings Bank April 19, 1930.....	\$ 2,603.60
NOTE: Due Medical Defense Fund, now carried in General Fund, Coupons, Bonds, deposited in General Fund December 1929, \$212.44.	
CLEARING:	
Due Defense Fund last year.....	\$ 1,249.27
Loan to General Fund.....	500.00
Dues 250 members at \$6.00.....	1,500.00 \$ 3,248.27
Cost of Medical Defense current year.....	1,699.15
April 19, 1930, Transferred from General Fund to Defense Fund.....	\$ 1,550.12

## Itemized Statement of Medical Defense Expense:

Sloan, Holton, McKesson & Scott—	
June 20, 1929.....	\$1,305.15
Sept. 10, 1929.....	150.00
Mar. 8, 1930.....	240.00
Rent Safety Deposit Box.....	4.00

\$1,699.15

## Total Amount Available for Medical Defense:

Due from Gen. Fund, Coupons Dec. 1929.....	\$ 212.44
Cash in Defense Fund.....	2,603.60
United States Bonds.....	10,000.00
	\$12,816.04

## Earnings of Defense Fund and Bonds Since Last Report:

Bonds, Coupons June 1929.....	\$ 212.56
December 1929.....	212.44
Savings Account, Interest June 1929.....	25.88
December 1929.....	20.64
	\$ 471.52

## Unpaid Expense for 1930:

To Southwestern Medicine—250 members at \$2.00.....	\$ 500.00
To Secretary for office expense.....	120.00
Stenographer annual meeting.....	

## Recommendations:

1. It is suggested that the Council, which is the Executive

Committee of the Association, keep in close touch with the financial condition of the Association.

2. Your Treasurer recommends that the dues be continued as last year, pro rated in the same amounts—Medical Defense \$6.00 and State Association \$6.50.

Respectfully submitted,

C. E. YOUNT,

Treasurer.

## REPORT OF COMMITTEE ON NECROLOGY

To the Arizona State Medical Association:

Your Committee on Necrology submits the following report:

Whereas, death has removed from the ranks of the medical profession of Arizona:

JAMES A. KETCHERSIDE, Yuma

EDMISTON DARRAGH, Bisbee.

ROSCOE G. BAZELL, Winslow.

And, whereas, these physicians were prominent in the activities of our State Medical Association;

And, whereas, by their kindly nature, courteous manner, and high professional attainments they won the admiration, respect and friendship of their professional confreres throughout the state;

Therefore, be it resolved, that in their death this Association has lost active and useful members, and the State of Arizona loyal and public spirited citizens;

And be it further resolved, that this resolution be made a part of the permanent record of the Arizona State Medical Association.

WILLIAM C. TODT.

R. N. LOONEY.

G. F. MANNING.

(Continued in July Issue)

## FIFTEENTH ANNUAL CLINICAL SESSION OF THE

### AMERICAN COLLEGE OF PHYSICIANS

The American College of Physicians will hold its Fifteenth Annual Clinical Session at Baltimore, Maryland, from March 23-27, inclusive, 1931. The Lord Baltimore Hotel will be headquarters.

Dr. Sydney R. Miller, Baltimore, as President, will have charge of the selection of the general scientific program. Dr. Maurice C. Pincoffs, of Baltimore, has been appointed by the Board of Regents as the General Chairman of the Session, and will make all local arrangements, including the making up of the program of clinics. Business details will be handled by the Executive Secretary, Mr. E. R. Loveland, from the College headquarters, 133-135 S. 36th Street, Philadelphia, Pa.

The attention of secretaries of various societies is called to the above dates, in the hope that their societies will select non-conflicting dates for their 1931 meetings.

## MASONIC HOSPITAL (El Paso) STAFF OFFICERS

The following officers of the Medical and Surgical Staff of the Masonic Hospital, El Paso, Texas, have been elected to serve during the year 1930:

President—Dr. J. A. Rawlings.

Vice-President—Dr. J. H. Gambrell.

Secretary and Treasurer—Dr. T. J. McCamant.

Efficiency Committee—Drs. H. H. Varner and J. Mott Rawlings.

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# Southwestern Medicine

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JUNE, 1930

No. 6

## EDITORIAL STAFF

DR. WARNER WATKINS, Box 1587, Phoenix, Arizona	Editor in Chief
DR. JAMES J. GORMAN, El Paso, Texas	Associate Editor
DR. ORVILLE H. BROWN, Phoenix, Arizona	Associate Editor
DR. L. B. COHENOUR, Albuquerque, N. M.	Associate Editor

## BOARD OF MANAGERS

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DR. JAMES VANCE (Chairman)	El Paso
DR. W. L. BROWN	El Paso

### NEW MEXICO STATE MEDICAL SOCIETY

DR. C. F. BEESON	Roswell
DR. H. A. MILLER	Clovis

### MEDICAL & SURGICAL ASSOCIATION OF THE SOUTHWEST

DR. E. PAYNE PALMER	Phoenix
DR. W. WARNER WATKINS	Phoenix

## THE SOUTHWESTERN CLINICAL CONFERENCE

The Medical and Surgical Association of the Southwest will present another Clinical Conference, at their annual meeting in El Paso, the dates of which are to be November 6, 7 and 8.

Dr. E. Payne Palmer, the president of the Association and the Program Committee, the El Paso representative of which is Dr. Willis W. Waite, have secured a very attractive group of teachers and lecturers. The details of the program have yet to be arranged, but the speakers include such well known men as Alvarez of the Mayo Clinic, Kreuschner of Chicago, Hibbs of New York, Hermanns of St. Louis, Ochsner of New Orleans, Breneman of Cleveland, Jackson of Denver, Roy Thomas and Sturgeon of Los Angeles. Following the idea of the president to have representatives on the program from different sections of the southwest, Dr. Leroy Peters of Albuquerque has been asked to represent New Mexico, Dr. Robert S. Flinn of Prescott and Dr. Allan K. Krause of Tucson to represent Arizona and Dr. Jim Camp of Pecos to represent western Texas.

Clinics will be presented by the El Paso County Society, assisted by the visiting clinicians and surgeons. Watch for further details in future issues of this journal.

## CONVENTIONS AND CONVENTIONS

After suffering in silence for many years, we have concluded to express our opinion about one phase of medical conventions, as usually conducted in the southwest. Strange to say, it was the recounting of certain occurrences at a national medical convention, recently held, which furnished the extra weight necessary to break the figurative back,—and silence,—of this particular dry camel.

In April the Arizona State Medical Association met in Phoenix, for its annual meeting. Although the Maricopa County Medical Society has refused to authorize the expenditure of any funds from its treasury for alcoholic drinks at any meetings for which the Society is host, the committee on arrangements considered it essential to the success of the meeting, the happiness and proper entertainment of the delegates, to establish what practically amounted to a bar in a private room at the hotel, where the thirst of the delegates and visitors could be alleviated. The funds for this type of entertainment were obtained by private solicitation from those members of the Society who were sympathetic toward the supposed desires of the visitors for this kind of refreshment. It is our contention that this violation of the state and national laws relative to the dispensing of intoxicants added nothing whatever to the success of the meeting; that it decreased rather than increased the attendance at the business and scientific meetings; that it did not enhance the esthetic enjoyment of the entertainment offered the visitors; that it did no good to any one; and, if it did not do harm, it was at least a useless expense and a venture which is not calculated to elevate the medical profession in the eyes of the discriminating public. At the close of our session, the Association voted to hold the next meeting in Nogales, the inducement offered them being the ease with which the pleasure (?) of similar entertainments might be secured in the border city. No doubt, a very excellent scientific program will be presented and the chaotic conditions in the Santa Cruz County Medical Society may be stabilized by holding the 1931 session there, but these very laudable reasons for the invitation were not mentioned.

Concurrently with this convention in Phoe-

nix, the annual district meeting of the Lions' Clubs of Arizona was running in Mesa. The editor did not attend that entire meeting but was present at the Saturday afternoon business session, when the matter of the meeting place for 1931 was being discussed and voted upon. Douglas presented its plea for the meeting, with emphasis upon the advantages (?) of the Social Club in Agua Prieta. The other bidder for the meeting was Safford, whose delegates frankly stated they could offer no such inducements, but could properly house and feed the delegates while they performed the work of the convention. Although the Lions' Clubs of Arizona are composed of young business and professional men, the majority of whom are perfectly willing to drink when the occasion arises, their convention voted by a surprising majority to hold the 1931 assembly in Safford.

The comparison between the attitude of this convention of luncheon clubs and the convention of scientific, highly intellectual professional men,—as to what constitutes the proper function of a convention, was very illuminating and not a very comfortable illumination to a member of the latter group.

We are told that the International Rotary Convention, held a year or two ago in an eastern city, was regarded by the bell boys and attaches of the headquarters hotel as a failure. The complaint recounted to a delegate by the ticket agent in the hotel, in all seriousness, was that while the attendance at the convention was phenomenal, the side lines of merchandise offered by the bell boys and other hotel employees received so little patronage, that the convention was a failure to them. "They attended the convention sessions!" That was the remarkable complaint of this ticket agent.

In asking one of the delegates to a recent national medical convention, held in a southern city, how he enjoyed the meeting, he replied, "Not much, too much boozing and not enough attention to the meetings." Here, again, we are told that a free bar was installed in the hotel and any delegate could go there and drink anything from raw whiskey to beer, ad libitum. A high official of the Association is said to have been almost too far under the influence of liquor to deliver an important address. At many business conferences, officials were absent, either going under or coming out of, the influence of this hospitality. Can any one contend that this adds to the success of a convention to which delegates go a long distance for serious business? This particular Association is one of the great agencies for carrying on educational work for Good Health among school chil-

dren! A moving picture of the inner circles of its annual convention might be a good thing to put out for this purpose.

Maybe the hot weather in Phoenix has gone to the editor's head, but at least this load is off his chest,—for the time being.

---

### DR. LEROY JONES

The accidental death of Dr. LeRoy Jones, of Phoenix, brought to a tragic close a very promising career in the medical profession of Maricopa County. While Dr. Jones had only recently located in Phoenix, his quiet, courteous and affable manner had won friends wherever he made contacts. He came to Arizona the latter part of last year, passing the Board in January. After taking care of the practice of Dr. Charvoz for a month or two, he had just entered into association with Dr. Goodrich, when he was killed in an automobile accident on May 16th. He is survived by his widow who was with him in the accident, but who was not seriously injured.

Dr. Jones was a graduate of Baylor University in 1928, taking special work in radiology and clinical laboratory before coming to Phoenix. He had expected to take up this class of work with the group of men associated with Dr. Goodrich.

---

### DR. EDMISTON DARRAGH

Dr. Edmiston Darragh, of Bisbee, a member of the Cochise County Medical Society and the American Medical Association, and a practitioner for fourteen years in Bisbee, died there on April 21st, of nephritis. Dr. Darragh was born in 1872, graduated from the Northwestern University in 1902, coming to Arizona in 1916. He has been a member of the Calumet & Arizona Hospital staff during all of this period, except during the World War, when he was in service.

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### CANCER RESEARCH BY NEWSPAPER BALLYHOO.

For those who are directly acquainted by personal contact with the workers and by immediate observation of the methods employed, the experiments being conducted by Drs. Coffey and Humber, and their associates, in California, may be entirely scientific, ethical and accurate. But to the medical mind, attuned to other methods of research and more conservative routes of purveying information, the ballyhoo which is appearing in the newspapers and over the radio, is repellent. It will result in a loss of confidence which no results that may be obtained and no data accumulated will ever succeed in restoring. The eminence of these men in their profes-



sion, and the high esteem in which they are held by their confreres will not be sufficient to offset the shock to the conservative-minded medical reader when he sees such articles as the full page illustrated write-up which appeared in the Detroit Free Press of April 20, and perhaps in other syndicated newspapers. Aside from the distrust engendered by such announcements through the newspapers, the method of handling patients is not calculated to create confidence. In three or four centers in California, patients are received and given their injections, very much like wholesale vaccinations or antityphoid inoculations might be administered. From all information received, they are not kept under any kind of observation or control which will be of value in reporting results obtained. Much might be said on the proper method of conducting scientific experiments in cancer treatment. The proponents of this method insist that it is experimental; yet the methods of applying it are not those of scientific experiment, but of clinical use of a proven and assured treatment,—such as a vaccination against smallpox. We have been told that the first announcement of this method through the newspapers was very embarrassing to the doctors. It is even more certain that the continued newspaper and radio propaganda,—whether it can be controlled by the doctors interested or not,—is even more embarrassing to the entire medical profession.

In marked contrast to this technic of education is the conservative and dignified method adopted by the Garvan Cancer Research Laboratory in Baltimore, which is partly supported by The Chemical Foundation. It is certain that when the medical profession is presented with final results from these two sources, the latter will be received with confidence, while the former will require considerable salting to make it intellectually assimilable.

## RADIO BROADCAST

(As Sponsored by the El Paso County Medical Society).

For twenty-five years laymen have been hearing that marvelously rapid strides have been made in the science and the practice of medicine. Yet, no organized effort has ever been made to supply the world with comprehensive information regarding medical discoveries and progress. We have been inclined to be shocked and surprised when our friends and former patients have had their backs rubbed because some glowing newspaper article had informed them that it was the cure for this, that and the other illness. Realizing the unfairness to the public, as well as the profession, the American Medical Association a few years ago instituted publicity programs of one sort or another to inform the public of what the medical profession had to offer. The late lamented president of the Texas State Medical Association, Joseph Dildy, adopted this publicity program, and centered his administration's activities around the annual health examination at his inauguration.

In harmony with the national and state program, the El Paso County Medical Soci-

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ety decided upon a publicity campaign for a six months period, and starting in September they inaugurated a weekly radio broadcast over both of their local stations. Public health problems were featured over one station, and health conservation, with the broadcast being built around the annual health examination, on the other. There was a physician in charge of each station's broadcast, who secured the services of a speaker for each week over his respective station. No physician's name was used over these broadcasts. Doctors were known as Doctor W. D. A.H. or Doctor K.T.S.M. There were two ways of judging the effect of these broadcasts upon the public. First, a question box was kept at the station and those interested were asked to write in questions concerning anything of a medical nature. The other was that it seemed to be the indoor sport of many in the community to guess who the doctor was who was speaking over the station, and frequent phone calls would come in and with queries as to who the speaker was. From these it was concluded that the public was actually listening to the broadcast, and that they did so weekly, for frequently they

would refer to statements made the previous week and sometimes for long periods back. Another accomplishment was, that all matters that pertained to medicine or health in any way that was presented the stations for broadcast were submitted to the committee to determine whether or not it was in any way offensive to regular medicine. In this way all irregular types of broadcasts were kept off the air, and El Paso has not been infested with this type of offensive information. These stations would naturally prefer to do business with the regular physicians of the city, and particularly when they were doing business with all the physicians in the city, rather than the isolated charlatan or irregular. This six months program cost the members of the society approximately six dollars apiece for the six months. And when it is considered that they are entirely amateurs at planning anything of a publicity nature, and particularly at radio broadcasting, they concluded that it was quite worth the time and expense incident to it, and there is little doubt that the society will continue the policy in the fall for another six months period.

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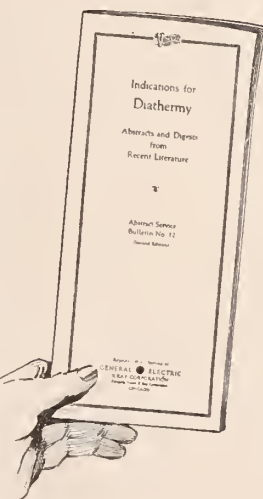
**Y**OUR decision to use diathermy in the treatment of any condition will, of course, be based on recognized medical authority. Many physicians have become interested as a result of observing the many references to diathermy in current medical literature, and no doubt intend to investigate for themselves when opportunity presents. But a busy practice affords little of the time required in searching the files of the medical library, and it is put off indefinitely.

A preliminary survey of the articles on diathermy, published during the past year or so, is available to you in

the form of a 64-page booklet entitled "Indications for Diathermy." In this booklet you will find over 250 abstracts and extracts from articles by American and foreign authorities, including references to more than a hundred conditions, in the treatment of which the use of diathermy is discussed.

If you number yourself among the physicians who have not adopted diathermy in practice, and desire to investigate this form of therapy in view of reaching your own conclusion as to its value in your practice, you will find this booklet a convenient reference.

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## ARIZONA PUBLIC HEALTH ASSOCIATION ANNUAL MEETING.

The Third Annual Meeting of the Arizona Public Health Association was held April 22 and 23 at Phoenix, Arizona, with headquarters at the Adams Hotel.

The session the first morning was devoted to a general meeting of all sections, while the afternoon sessions and those of the following day were divided into three groups:—the Health Officers session, Water and Sewage session, and Dairy Inspectors session. Lantern slides and moving picture films presented at the meeting gave an added interest for the guests. An outstanding feature was the presence of the new Southern Pacific health car, which made its maiden trip for the benefit of those attending the meeting. This car was in charge of Dr. J. C. Geiger, Epidemiologist from the University of California. Dr. Geiger also gave a very interesting account of undulant fever.

There was a total registration of 117 guests for the two days. This list included Governor John C. Phillips, of Arizona, who gave an excellent talk on Health Policies at a dinner on the evening of the 22nd, and Dr. R. J. Stroud, State Superintendent of Public Health, who took a very active part in the meetings. Out-of-state visitors included the following representatives:—Dr. J. C. Anderson, State Superintendent of Health, State Board of Health, Texas; Chester Cohen, State Sanitary Engineer of Texas, and Dr. P. R. Outlaw, City Health Officer of El Paso. New Mexico was represented by Mr. Paul Fox, State Sanitary Engineer, who presented a paper on Disaster Relief. The United States Public Health Service was represented by Dr. H. A. Spencer, Acting Surgeon, San Pedro, California; Dr. F. T. Foard, Acting Assistant Surgeon, Stockton, California, and Mr. H. B. Hommon, Sanitary Engineer in Charge, San Francisco, California. Dr. J. H. Bushong, Assistant Secretary American Society Medical Milk Commissioners, Los Angeles, was also present at the meeting.

As a result of the interest taken in Dr. Harry Carson's talk on Incidence of Dysentery in the Salt River Valley, a stream pollution survey is being made of the Salt River from Granite Reef dam to the junction with the Gila. This work is being done in the co-operative arrangement with the United States Public Health Service and State Board of Health, and City Engineers' Department of Phoenix.

The new officers of the Association elected are as follows: President, Dr. H. T. Southworth, Prescott; vice-presidents, Dr. H. A. Reese, Yuma, and W. J. Jamieson, Phoenix; executive committee, Mrs. Helene Thomas Bennett, Yuma; Dr. C. H. Laugharn, Clifton; T. P. Morgan, Phoenix, and M. R. Tillotson, Grand Canyon. Jane H. Rider, Tucson, was re-appointed Secretary-Treasurer.

### EL PASO COUNTY MEDICAL SOCIETY Regular Meeting, April 14, 1930.

Meeting called to order at 8 p. m., by the president, Dr. Paul Gallagher. There were 53 members and 2 visitors present.

Minutes of the previous meeting were read and approved.

The first number on the program was a clinical case presented by DR. GARRETT.

This was a Mexican man about 30 years of age, whose chief complaint was very severe upper abdominal pain radiating into back and chest. He was doubled up in agony. Had with him an x-ray film the report of which stated that there was probably present an obstruction of the cystic duct. How-

ever, on questioning him it was found that at age 18, he had a venereal sore and was given 18 intramuscular injections, then some drop medicine for awhile. Had received no other treatment as he thought he was well. Six years ago started having severe pains in legs, lasting one to eight hours. At first these pains came on at rare intervals, but as time elapsed they became more frequent. Then he started having upper abdominal pain at infrequent intervals—at first once a year, then every few months, and now about once a week. The pain was severe enough to keep him from work. His family physician had four blood Wassermanns made, but as they were all negative, gave him no anti-leptic treatment. When Dr. Garrett examined him he found his pupils irregular and that they did not react to light. His knee reflexes, however, were still present. Cremasteric and superficial abdominal reflexes were absent; no ataxia as yet. He had a spinal fluid examination made and obtained the following report: Wassermann 1 plus, cell count 40, (mostly monos), globulin increased, colloidal gold showed a median zone reaction. Dr. Garrett considered this a typical early case of leptic infection of the central nervous system. In a patient such as this, the picture is perfectly clear when all the data is obtained, but in a hurried examination we are apt to jump at some conclusion wide of the mark. The prognosis in this particular case is not especially good, but the fact that as yet the patient has not a typical tabes is in his favor and with modern treatment the prognosis as to arrest should be favorable.

CAPT. PRATT discussed the case. It seemed to him that as the man walked the room, he showed a little difficulty in maintaining his equilibrium. It is not unusual for cases with abdominal crises of central nervous origin to fall into the hands of sur-

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geons. As regards treatment, the sooner this is instituted, the better the prognosis. If you push mercury and potassium iodide and especially tryparsamid and then follow with fever therapy (preferably malaria) and follow the tagain with tryparsamid and mercury, you may expect results.

The next number on the program was "Some Interesting Lung Cases," by DR. EGBERT, ARNOLD and GIBSON. These consisted of x-ray views of the chests of patients projected on the screen, together with a brief resume of the physical findings, history, course, etc. The first case was that of a young man with a rather typical case of pulmonary tuberculosis, who had received three doses of pneumothorax. The second case was another typical case of pulmonary tuberculosis, who had had a spontaneous pneumothorax associated with pneumonia in 1928. Since then thoracoplasty had been performed. An interesting feature of this case was that he had a calcified pleura, which is a rare bit of pathology. After the thoracoplasty, fragments of this calcified pleura dropped down in the lower part of the pleural cavity, as demonstrated by the x-ray. Another interesting feature of this case was the ingenious method of applying pressure to the operated side without producing pressure to the contralateral side. This method consisted of a sling or hammock in which the patient lay on his side and was suspended from pulleys to a frame work very much the same as is done in suspending a fractured leg. It had been devised by Dr. Arnold. The third case was that of a man, 66 years old, who had been sent here with a diagnosis of bronchiectasis. But Dr. Egbert was of the opinion that in addition to "bronchiectasis," the patient had pulmonary cancer. He said that cancer was often engrafted into a bronchiectasis and that the latter is the commonest complication in cancer. The fourth and last case was that of an old man, past 60, who undoubtedly had an old tuberculosis, but in addition to this, Dr. Egbert suspected cancer, as the physical findings did not account for all his symptoms.

The next number on the program was "Focal Infection" by DR. L. A. NEIL, (dentist). Dr. Neil stated that "a better title would have been 'Some Improvement, Local and Systemic, Following Pyorrhea Treatment'" He also said that while a great deal of thought and study had been given to the abscessed tooth, but little has been said about the seriousness of pyorrheal infection. Forty or fifty inches of gum tissue gives quite a good-sized area for infection. A singled rooted tooth is much easier to free of infection than a double rooted one. The primary factor in all these cases of pyorrhea is traumatic occlusion. The treatment consists of correction of this traumatic occlusion and curetment. Successful treatment in pyorrhea should aim at the elimination of infection. He then showed a number of x-ray film taken before and after treatment. In all of them great improvement was noted. Also, the patient's general health had been materially benefited.

DR. CATHCART, in discussing Dr. Neil's roentgenograms, said that in all of them the bone regeneration stood out very clearly.

DR. FELIX P. MILLER then read a preliminary infecting the pleura. To avoid this, many methods Pneumatic Bags. Drainage of an infected lung across an area where pleural adhesions are not complete entails danger of collapsing the lung and of infecting the pleura. To avoid this, many methods have been advocated to cause adhesions between the parietal and visceral layers of the pleura. In 1928, Dr. Miller began the use of rubber bags for this purpose. At first he used Barnes or Voorhees'


bags and then the Pilcher prostatic rubber bags. He found them clumsy and adaptable for the conditions. So in 1929, he devised a rubber bag that is much more suitable for the purpose. He has found that external pneumolysis by means of these pneumatic bags will be of distinct value for safety, first, as a preliminary procedure to transpleural operation for the approach of tumors of the chest, and third, as a preliminary operation in causing compression of diseased conditions in the lung where it is not desirable to open the pleura.

Dr. Miller then presented the case of a patient who had had a lung abscess and had been treated by the use of these bags. He was entirely recovered in every way with the exception of a pleuro-bronchial fistula, which was still draining. This been expected.

DR. EGBERT thought the bag very interesting and that it undoubtedly had a purpose to serve. He asked Dr. Miller how long would the tissues bear the insult of pressure without necrosis. Dr. Miller stated that in the case presented, the bag had been left in two weeks, that whether or not necrosis occurred, depended on the amount of pressure used. On tuberculous processes, it would not be desirable to exert much pressure.


DR. R. B. HOMAN thought the bag should be very useful in cases of lung abscess. In the particular case presented, it had worked wonders.

DR. W. W. BRITTON then gave a case report of a patient who had come in the preceding Saturday and who brought his x-ray film and diagnosis with him. He was a man aged 21. On looking at the x-ray, Dr. Britton at first agreed with the diagnosis of spontaneous pneumothorax with effusion, but after making a physical examination, he could not. There had never been the distressed condition that should be present after a spontaneous pneumothorax and there was an absence of the tinkle sound that he has always found in these com-



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bined conditions. The fluid level showed no changes in change of posture.

DR. EGBERT stated that spontaneous pneumothorax in the lower lobe produced fluid in the pleural cavity almost immediately. In this case one might conceive of a partial pneumothorax.

DR. CATHCART said that the x-ray indicated to him simply encysted fluid.

The president announced that the personnel of the various committees for the meeting of the Medical and Surgical Association would be announced at the first meeting in September.

The application for membership of Dr. S. E. Wilson was then read. He was unanimously accepted into the society.

The president announced that the next meeting, that of April 28th, would be held at the Red Cross Building of William Beaumont Hospital, the program to be supplied by the staff members of that hospital.

There being no further business, the meeting adjourned at 10 p. m.

S. H. Newman, M. D.  
Secretary-Treasurer.

DR. R. J. STROUD, of Tempe, State Health Officer for Arizona, left June 8th for eastern points. He will be gone about a month, during which time he will attend several medical conventions, including the American Public Health Association and the American Medical Association. To the latter convention he is the official member of the House of Delegates from Arizona.

DR. ORVILLE H. BROWN of Phoenix, attended the New Mexico Medical Society's meeting at Raton, June 4 to 6, as the fraternal delegate from Arizona. He presented a paper before the Society.

DR. A. M. TUTHILL, of Phoenix, after ten years retirement from the army, following his distinguished services during the World War, has resumed active service and has again taken charge of the brigade which he commanded during the war. He has been honored by having a new army post named for him, and is now on active duty with his brigade at "Fort Tuthill" in Colorado. His many professional friends will welcome the news that General Tuthill is again in physical shape for such duties.

DR. E. PAYNE PALMER, of Phoenix, will leave within a few days for the Medical Association in Detroit, where he is a member of the corps of demonstrators on the treatment of fractures, in the Scientific Exhibit. Dr. Palmer will exhibit the treatment of fractures of the scapula.

DRS. ORVILLE H. BROWN and LOREN C. BARLOW, of Phoenix, have moved their offices from the Goodrich Building to the Security Building, No. 422, where they may hereafter be found.

DR. D. R. GASKINS, of Phoenix, has opened offices at 210 Security Building, where he will practice the specialties of diseases of the Ear, Nose and Throat.

OPENING AT WINSLOW, ARIZ.: Mrs. C. Prewitt Gregg, the widow of Dr. Gregg, who recently died suddenly while enroute to Los Angeles with a patient, announce that there is an opening in Winslow for a physician. The purchase of the office equipment is all that is requested of any one taking over this location.

DR. VERON KENNEDY, of Phoenix, has returned to the Mayo Clinic, Rochester, Minn., for further treatment of duodenal ulcer.

DR. HOWELL RANDOLPH, of Phoenix, is spending a month in the Mogollon Mountains, combining a vacation with duties as physician for the Boy Scouts' Camp near Payson.

MONOGRAPH ON MALARIA. By D. Drysdale Anderson, M.R.C.S., L.R.C.P., Medical Officer of Health, West African Medical Staff. Published by S. J. Pridgen Co., Atlanta, Ga. 28 colored plates and 47 drawings. \$6.00.

This is the initial volume of the Ready Reference Medicine and Surgery, to be issued in monographs by these publishers. The introduction to this volume is written by Dr. Allen Bunce of Atlanta. There are several unique features in this monograph, which will be carried through other volumes. In this work, the author covers the subject in a very concise way which the busy practitioner will appreciate. There is a very large marginal space for notations by the reader. There are perforated blank pages in the back of the volume for tipping in future additions. There are also blank pages following the perforated sheets, so that personal memoranda of cases may be written in by the doctor. The colored illustrations, and the black and white drawings are very good.

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#### SHORT POSTGRADUATE COURSES

The medical men in such districts as the southwest will welcome the tendency of medical schools to give short, intensive, courses on selected phases of clinical medicine. Several of the schools offer such opportunities this year. One of the most attractive is the Symposium on Kidney in Health and Disease, to be held at the University of Minnesota Medical School, Minneapolis, July 7 to 18. The University offers this ten day course free of charge. With forenoon and afternoon lectures and clinics by eminent clinicians, including Prof. F. Volhard, Marshall, Rowntree, Keith, and others, such a course as this offers an excellent opportunity to any one who wishes to bring his knowledge of kidney physiology, pathology and clinical disease up to date.

DR. CHARLES C. TIFFIN, of Seattle, who was on the program of the Arizona State Medical Association meeting in Phoenix, in April, was detained at the last minute by an emergency operation upon his daughter for acute appendicitis. He has sent his regrets to several friends in Arizona, who have transmitted them to this journal for publication. The last reports received were that the daughter was practically out of danger, which the doctor's friends in Arizona will be very glad to hear.

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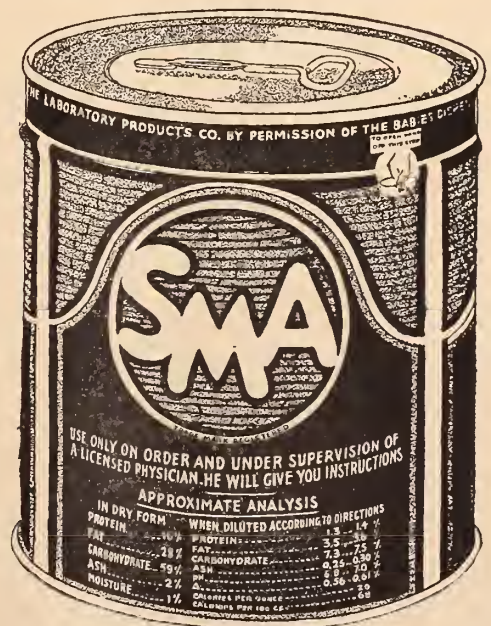
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Volume XIV.

JULY, 1930

No. 7

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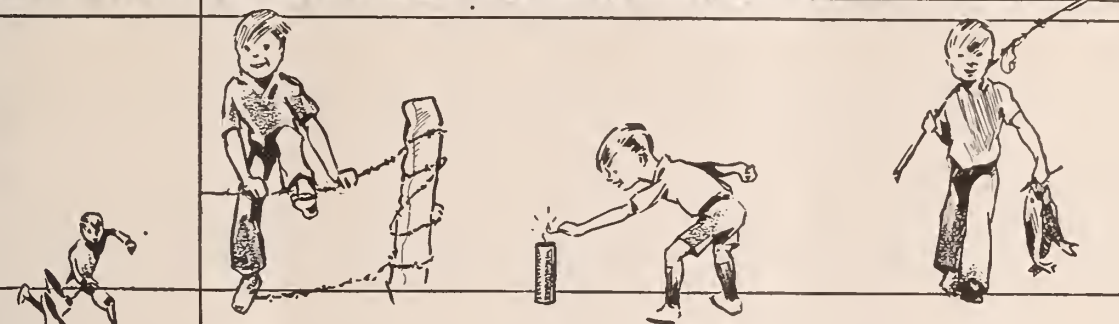
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But, nevertheless, hay fever in the Northern States at least, is in fact seasonal in character and of three types, viz.:

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And this last, the late summer type, is usually the most serious and difficult to treat as partly due to the greater diversity of late summer pollens as regionally dispersed.

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	Grams	Prot.	Fat	Carb.	Cal.
2 teaspoons Knox Sparkling Gelatine	4.5	4	....	....	....
1/2 cup cold water	....	....	....	....	....
1/2 cup hot water	....	....	....	....	....
1/2 teaspoon salt	....	....	....	....	....
1/2 cup vinegar	....	....	....	....	....
1 1/2 cups grated cheese	150	43	54	....	....
1/2 cup chopped stuffed olives	70	1	19	8	....
1/2 cup chopped celery	60	1	....	2	....
1/4 cup chopped green pepper	25	....	....	1	....
1/2 cup cream, whipped	75	2	30	2	....
Total	51	103	13	1183	
One serving	8.5	17	2	197	

Soak gelatine in cold water. Bring water and salt to boil and dissolve gelatine in it. Add vinegar and set aside to chill. When nearly set, beat until frothy, fold in cheese, olives, celery, pepper and whipped cream. Turn into molds and chill until firm. Unmold on lettuce leaf and serve.

## SPINACH SALAD (Six Servings)

	Grams	Prot.	Fat	Carb.	Cal.
1 1/2 tablespoons Knox Sparkling Gelatine	10	9	....	....	....
1/4 cup cold water	....	....	....	....	....
1 1/4 cups boiling water	....	....	....	....	....
2 tablespoons lemon juice	20	....	....	2	....
1/2 teaspoon salt	....	....	....	....	....
1 1/2 cups cooked spinach, chopped	300	6	....	7	....
2 hard cooked eggs	100	13	10.5	....	....
Total	28	10.5	9	242.5	
One serving	5	2	1.5	40	

Soak gelatine in cold water and dissolve in boiling water. Add lemon juice, salt, strain and chill. When nearly set, stir in chopped spinach, mold and chill until firm. Serve on lettuce hearts or tender chicory leaves and garnish with hard cooked egg, cut lengthwise in sixths and sprinkled with paprika. Serve with mayonnaise.

**If** you agree that recipes like the ones on this page will be helpful in your diabetic practice, write for our complete Diabetic Recipe Book—it contains dozens of valuable recommendations. We shall be glad to mail you as many copies as you desire. Knox Gelatine Laboratories, 438 Knox Ave., Johnstown, N. Y.

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## PRESIDENTIAL ADDRESS

ROBERT O. BROWN, M. D.  
Santa Fe, New Mexico

(Delivered before the New Mexico Medical Society, at its Forty-Eighth Annual Meeting, Raton, N. M., June 4-6, 1930.)

First, let me express my appreciation of the honor done me in my election as President of the New Mexico Medical Society for 1930-31. I know that doctors as a whole are not given to praising themselves, but I should like to register my opinion, which has been strengthened year by year, that the doctors of New Mexico are a group of men meriting and receiving great respect as individuals in human society, and, as a group amongst the larger group of physicians and surgeons of the United States, for their professional ability. The compliment of being elected the president of a society made up of such people is, to my mind, a real one.

For this compliment I thank you, and pledge you my sincere efforts to be of some service to you, and to your efforts for others. The routine work of the Society I shall do my best to take care of properly, humbly trying to learn at the feet of Doctor Cohenour and others what I do not know.

I think we all realize that we suffer at times from a lack of cohesion in the state society, and in the foundation of the state society, the county medical societies. Distances are great and the population widely scattered in New Mexico, but I think that we all agree that the local gatherings of the physicians, which these distances make difficult, are very much worth while. Whether the main feature of the meeting of the county society be a formal paper, or informal discussion, clinical reports, discussion of case reports, as those of the Massachusetts General Hospital, or chiefly, or even purely, social gatherings, the practicing physician's mind

is cleared, and his proficiency increased by contacts with his professional brothers and their ideas, and, perhaps as important as anything else, it affords an opportunity to get straightened out on the small or large misunderstandings that always have and always will come up between human beings whose orbits of activity meet and overlap. Perhaps your officers, councillors and delegates can help in the full functioning of the county societies; it is worth trying, and I feel sure that the basis of a coherent and cohesive state society is the actively functioning county medical society.

Only by a coherent and cohesive state society can we secure for ourselves, our profession and for society at large in New Mexico the things which we desire. These desires fall naturally in certain divisions; our own legitimate economic desires; our desires to improve ourselves professionally; and our desire to render the greatest service possible to that society of which we are members. Efforts properly balanced toward furthering all these desires further each other and, in the end, most largely, the third—that for service to our communities. After all, I believe that in gratifying this last desire, we secure our greatest satisfaction and our fullest repayment.

There are numerous ways in which the medical profession, as a group, can render service to the community, besides the daily practice of their profession. Among these are, encouragement of the work of the Bureau of Public Health, the value of whose work, because of our specialized education, we appreciate more than the layman; aid and encouragement of the work of the State Bureau of Child Welfare, and of the various local units of welfare work, private, municipal, county, district and state, which help to fill in the gaps between what the patient



can afford to have and what they should, or must have; education of legislators amongst our patients to the needs of these Bureaus, financial and legislative; and, last, but certainly not least, education of our legislators to the need for adequate protection for the layman citizen of the state from the practitioner of the healing arts whom we know not to be adequately educated in these arts.

It seems rather ridiculous to us, who have spent many years and much hard labor in acquiring knowledge fitting us to practice the healing art, that the layman is not more astute in his appreciation of what knowledge is necessary thereto. We know what a highly intricate and complicated machine the human body is. The layman, having usually absolutely no education in anatomy, physiology and the like, does not. But he does have a child like faith in letters of any kind, before or after a name, and especially the title "Doctor." He has not insisted that the title legally, shall mean much, but he believes it does. And he expects great knowledge from the man who sports the title, in which he is often greatly deceived. Does not our greater knowledge, a knowledge which we have been enabled to secure through the organization by society of colleges and universities, place an obligation on us to protect the less educated of society from the uneducated and unqualified practitioner of the healing arts?

All civilized countries have made attempts to protect its citizens in some manner, by medical practice acts which are variously successful. In the United States and in New Mexico particularly, the physician of the regular school has cleaned his house well and has it pretty well in order. We have in New Mexico as admirable a set of regulations governing the practice of medicine by the physician of the regular school as could be desired, and a Board of Medical Examiners whose work is above reproach. But our medical practice acts, as regards other than the regular school, are very poor. Most of us here are at least fairly well acquainted with the efforts made in the past to rectify these shortcomings. Some of us are painfully well acquainted with them. The last attempt was made three years ago in the legislature, and failed through lack of preparatory work on the legislators, a lack of interest on the part of the physicians, which I believe was more apparent than real, and a far too active interest in opposition to the bill on the part of some of the practitioners of the healing arts other than the regular school.

The suggested act was one for a combined board—a not entirely satisfactory type at best, and perhaps we are as well off with-

out it. It suffered from a defect rather common in bills controlling the practice of the healing arts; it took care of present evils fairly well, but made no provision for new schools of medicine, at present either just arising or non-existent. A medical practice act should do both, to be efficient or just. And a good medical practice act must avoid direct frontal attack, for the various schools of medicine are too deeply entrenched, with much financial outlay for colleges, equipment, propaganda and the like, as well as many individuals engaged in practice, to be dislodged without great difficulty by such an attack. Nor is amalgamation of the present various schools of medicine advisable, with the idea of starting over again with a clean sheet; this solves nothing and makes no provision for new schools of practice.

There is one type of control of the practice of the healing arts which seems to fit the situation we have here in New Mexico, with our separate licensing boards, better than anything else. This is the so-called basic science act. Such acts are already in force in six states: Connecticut, Minnesota, Nebraska, Washington, Wisconsin, Arkansas and in the District of Columbia, in all of which during the years they have been in force, from 1927 on, have proved fairly satisfactory. They are eminently fair and reasonable, to such a degree indeed that their reasonableness is at once evident even to a distracted legislator in the heat of a campaign or a legislative session. They provide for present established schools of practice as well as for future ones. And they provide a fair degree of protection for the layman uneducated in the details of his own make-up.

The basic science acts recognize the existence of various schools of medical practice, but also recognize the basic sciences, which must underly all practice of the healing arts, such as anatomy, physiology, chemistry, bacteriology and pathology. These sciences are not matters of dogma, but of observed facts. By seeing to it that all practitioners of the healing arts know something of these basic sciences, no matter what their school of treatment, society is protected to a certain extent. To avoid prejudice, it is provided that the examiners shall not be in the active practice of any school of the healing arts, and that all practitioners, of whatever school, shall take the examination. They meet the tangle as to requirements in preliminary education by allowing even the high school graduate to take the examination. On presentation of a certificate granted on passing the examination in the basic

sciences, the various licensing boards for the various schools of medicine may make further examination in the same subjects, or in other subjects only, as they desire, and they may further make their own requirements for years of study, preliminary or medical, hospital service, and the like. They do not, therefore, pull all the schools down to a common low level but rather permit each to rise to as high a level as it may wish, at the same time providing a minimum below which they may not fall. Reciprocity is provided for states with basic science acts, or conducting actual examination in the same sciences. They do not restrict the patient to a single choice as to the method of diagnosis and treatment but do provide that he shall be at least partially protected against unqualified practitioners in whatever method he elects.

It seems to me that New Mexico badly needs some added protection for the medically uneducated layman; that logically the state might look to the organized medical profession to suggest a method for securing such protection; that in suggesting it we are furthering our own legitimate, selfish, as well as unselfish, desires; and that the so-called basic science acts offer the best method of securing such protection to our fellow citizens. I have, therefore, brought it to your attention here, and would ask you to consider it, with the possible idea of some recommendation to your officers, council and house of delegates as to action which you may desire.

### THE HEART IN TUBERCULOSIS, WITH PRELIMINARY REPORT OF ELECTROCARDIOGRAPHIC STUDY OF 105 CASES

W. R. LEVERTON, M. D.  
U. S. Veterans' Hospital,  
Tucson, Arizona.

(Read before the Arizona State Medical Association, April 24 to 27, 1930, at Phoenix, Arizona, and published with the permission of the Medical Director of U. S. Veterans' Bureau, who assumes no responsibility for opinions expressed or conclusions drawn by the writer.)

A properly functioning heart, one that does not draw too heavily upon its own reserve power, is one of the most valuable assets of the tuberculous patient. That there exists a very definite interrelation, interdependence and association between the cardiovascular and respiratory systems is an accepted fact. Any impediment, either within the heart or along the course of the greater or lesser circulation, which interferes with the normal propulsion of the blood stream,

naturally increases the heart load. This increased load continued over a long period of time, or an unusually heavy load for a shorter period, will utilize the reserve force and eventually result in a temporary or permanent weakening of the myocardium.

Dr. Lemon<sup>1</sup>, of the Mayo Clinic, in a recent study, "The Effect of Chronic Pulmonary Disease on the Volume and Composition of the Blood," has demonstrated that an impaired function of the heart muscle results from the increased load placed upon the organ, due to disturbance in the pulmonary circulation in certain pathologic conditions in the thorax.

A discussion by Dr. Rappoport<sup>2</sup>, of Denver, on "Anoxemic Syndrome as a Cause of Myocardial Insufficiency in Pulmonary Tuberculosis," appears logical and conclusive.

As clinicians, we frequently observe a symptomatology, especially in pulmonary tuberculous patients, which under ordinary circumstances would direct our attention to the heart as a causative factor. These symptoms, I fear, are too frequently disregarded, simply "passed over," as a part of the pulmonary syndrome, the stethoscope probably failing to reveal sufficient evidence to warrant a diagnosis of "heart disease." We cannot rely too much upon positive physical findings. The "silent heart," the heart in which no adventitious sounds are heard, may be the most dangerous type. The myocardial insufficiency associated with and resulting from the chronic pulmonary tuberculous lesion, is frequently overlooked because of the absence of outstanding objective and subjective symptoms. Faint heart sounds, possibly diminished pulse pressure, occasionally a systolic murmur heard over precordium, being the only positive objective findings. The subjective symptoms may be negligible so long as patient remains at rest. Palpitation, precordial pain, arrhythmia, tachycardia, cyanosis, and dyspnea following exercise or the taking of a heavy meal, are significant.

In considering myocardial insufficiency, it is important that we think of the five automatic qualities of the heart muscle, namely: tonicity, contractility, conductivity, irritability and rhythmicity. In any long-continued toxic state, such as is observed in tuberculosis, we may find any one or all of these properties disturbed.

Tonicity of the heart muscle is that quality which resists over-distention in diastole and guards against the loss of a "safe footing" for the recurring active contraction. Ionus deficiency is probably the basic prin-



ciple of myocardial insufficiency of which we are talking. There may be present a pre-existing myocardial abnormality resulting from some previous infectious process. Evidence of myocardial degeneration may be found in the heart so affected.

Certain variations are observed in the electrocardiogram, in a large percentage of tuberculous cases, presenting symptoms suggestive of cardiac dysfunction. The significance of these changes is not understood as yet; however, the frequency of a low P wave, certain irregularities of the Q.R.S. complex, a flattening of the T wave, are, we believe, indicative of myocardial hypotonicity.

Disturbance in conduction as shown by prolongation of the P. R. interval, complete block, widening and other abnormalities of the Q.R.S., as found in bundle branch block and certain irregularities of the Q.R.S. indicating arborization block, and increased irritability as manifested by premature systoles, fibrillation and paroxysmal tachycardia, have been observed with varying degrees of frequency. Cases have not been studied in sufficient number in this series to justify a conclusion as to the comparative prevalence of these abnormalities..

Reserve is that quality which gives elasticity to the heart and provides it with power to maintain a normal output and meet the demands of the body under extremities, represented by absolute body rest on the one hand, and the most violent exertion on the other. This surplus power is a variable factor, lower in the asthenic individual with a small drop-type heart, and is a force most difficult to evaluate because of our inability to measure damage done to the myocardium by some previous infectious or toxic process. It is the degree of impairment or exhaustion of reserve force, the sudden or gradual narrowing of the field of response, which determines cardiac insufficiency. Our prime objective, then, should be the early recognition of this disturbance in function and, so far as possible, to measure the degree of impairment while there is an opportunity to amplify, restore or rehabilitate myocardial reserve.

The pathologist is unable to demonstrate at necropsy a concrete change in the myocardium which fully explains the clinical picture of the failing heart. Myocardial insufficiency, as we observe it in the tuberculous patient, is similar to the insufficiency found in other toxemic states. It is not a myocarditis. It may or may not have left evidence

of a degenerative change in the muscle cells. Dr. Lyman Green<sup>3</sup> states that "a heart which certainly killed its possessor is not of necessity the seat of such demonstrable, specific and concrete changes as are adequate to explain death." Dr. Robertson<sup>4</sup>, pathologist of the Mayo Clinic, and Dr. Henry Hartman<sup>5</sup>, former professor of pathology, University of Texas, state that macroscopical findings at necropsy justify the clinical diagnosis of insufficiency. However, there are no specific microscopical changes found. Dr. Hartman further expresses the opinion that hypertrophy cannot exist in the active toxic tuberculous patient, because of the inability of overworked muscle to retain sufficient nutrition. Hypertrophy, however, is not uncommon where there exists moderate to extensive pulmonary fibrosis, in a non-toxic, well-nourished patient. Dr. Blumberg, pathologist at one of the larger Veterans' Bureau hospitals, explains myocardial failure in tuberculosis as follows: "The increased work of the heart; the failure to furnish sugar to muscle tissue, as result of toxic state, associated with fever and the lessened exogenous supply, deprives the muscle tissue of the necessary sugar content. These factors, in addition to the formation of fatigue bodies, as well as sarcolactic acid, decrease the power of the myocardium to the point where its working capacity will fail."

In our series of 105 cases of pulmonary tuberculosis studied at this hospital, practically all presented some symptoms suggesting heart dysfunction. An attempt has been made, by means of careful consideration of history, the subjective symptoms, physical findings, and electrocardiographic changes, to evaluate the extent of impairment. In many instances, additional information was supplied through laboratory tests, such as study of twenty-four hour specimen of urine, blood chemistry, basal metabolism and vital capacity.

Approximately seventy per cent of the series of 105 cases were classed as having myocardial insufficiency of minimal, moderate or severe degree. Five case histories representing patients who gave positive clinical history, physical findings, or electrocardiographic changes, are submitted.

Table No. 1 gives the average loss of weight and average systolic and diastolic blood pressure in the 105 cases.

Table No. 2 tabulates the abnormalities noted in the cardiograms.

(Table No. 1)					
Average loss of weight	Average Blood Pressure				
Classification	No. Pounds	Classification	No. S	D	
C	45 36	C	45 107	74	
B	43 21	B	43 115	78½	
A	13 5½	A	13 120	79	
Inactive	4 0	Inactive	4 115	76	

## ELECTROCARDIOGRAPHIC FINDINGS

(Table No. 2).					
Inverted R, Lead I (Indicating right axis deviation)			S predominating, Lead III (Indicating left axis deviation)		
C	21		C	8	
B	9		B	5	
A	3		A	2	Total 15
Inactive	1	Total 34			
P below 1 mm., Main Lead					
C	26		C	14	
B	21		B	11	
A	3		A	4	Total 29
Inactive	3	Total 53			

QRS Complex below 7 mm., Main Lead			T below 2 mm., Main Lead		
Classification	No	Total	Classification	No	Total
C	11		C	26	
B	6		B	14	
A	3		A	2	
Inactive	1	21	Inactive	1	43

RT coming off above Base Line			Convex RT		
C	5		C	4	
B	5		B	7	
A	4	14	A	4	15
Inactive	1	31			

Rate above 100		
C	21	
B	7	
A	2	
Inactive	1	31

The following cases are presented as representative of the group presenting subjective symptoms indicating varying degrees of myocardial insufficiency.

The electrocardiographic changes, while not definitely diagnostic, in each instance, are, we believe, worth consideration.

## CASE 1.

Male, white, age 50. Occupation: assistant general storekeeper.

Family history: Negative.

Personal history: Typhoid at age of 12. Malaria, Spanish-American war. Recurrent attacks of chills and fever until 1920. Pneumonia also during Spanish-American war. Icterus in 1919, duration 15 months. Arthritis, 1916-17. Diagnosed pulmonary tuberculosis in 1928. Symptoms for one year prior to diagnosis.

Admitted to this hospital in November, 1929. Diagnosed tuberculosis, pulmonary, chronic, far advanced, "B". Fibrosis right upper, fibro-caseous, infiltration left upper, cavity one inch in diameter. Subjective symptoms: Cough, loss of weight, weakness, shortness of breath for past two years, more severe past few months. Was told he had "asthma." Dyspnea on slight exertion persists. "Fluttering" in region of left nipple. Attacks of short duration,

leave sensation of soreness. Vertigo on rising from prone position.

Heart study December 1, 1929. Blood pressure: systolic, 106; diastolic, 74. Sounds faint, presystolic and systolic murmur precordium.

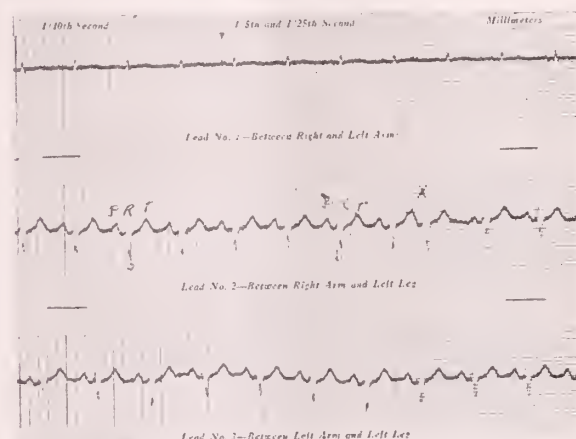


Fig. 1

Urine negative. Wassermann negative. Sputum negative. Cardiogram (Fig. 1) made, showing rate 100 X premature systole. Note approximate equal voltage of R and S in leads 2 and 3; S notched in leads 2 and 3. Dec. 1, 1929. Treatment: rest, low-protein diet. Digitalized and maintained 3 months.

March 21, 1930: Recheck cardiogram made, showing rate 86, with no appreciable change in deflections. Urine: Specific gravity, 1.026; albumin, negative; occasional WBC; total N., 14.6; urea, 31.2; creatinin, 0.7; uric acid, 0.7; chlorides, 14. Blood chemistry: NPN, 23.1; urea, N 9.4; creatinin, 1.4; uric acid, 1.3; sugar, 112.

General condition improved. Practically no shortness of breath so long as digitalis is continued.

Diagnosis: Myocardial insufficiency.

## CASE 2.

Male; white; age 30; occupation, miner.

Family history: Father died of heart trouble; one sister died of tuberculosis.

Personal history: Tonsillectomy, 1923. Metal mining for five years, intermittently, prewar. Discharged, December, 1918, no disability. Returned to work, developed "colds," cough. Diagnosed bronchitis but had streaked sputum. Continued work

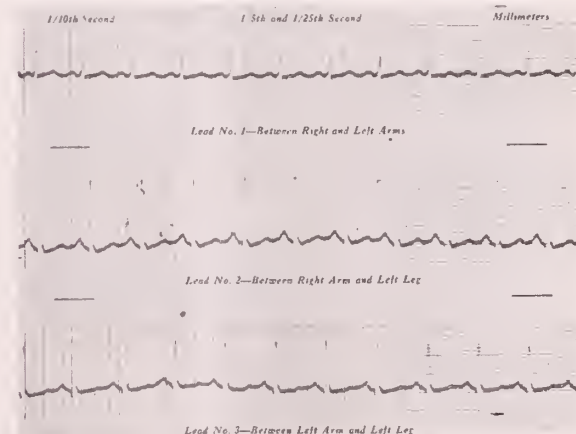


Fig. 2



at intervals. Pulmonary hemorrhage, 1924. Diagnosed tuberculosis, 1928.

Admitted to this hospital February, 1930. Diagnosed tuberculosis, far advanced "B." Fibrocaceous infiltration middle and upper lobes, right, fibrocaceous infiltration both lobes left; cavity both uppers. Normal weight, 147; admission weight, 135. Blood pressure: systolic, 118; diastolic, 84. Temperature range, 97.8-99. Sputum, positive. Urine, negative. Blood chemistry: NPN, 31.4; urea N, 12.4; creatinin, 1; uric acid 1.2; chlorides, 598; sugar, 88.9; calcium, 10.4. Basal metabolism rate, plus 16.18 per cent. Vital capacity, 2.4 liters. Electrocardiogram (Fig. 2) made March 11, showing rate 112, sinus rhythm; flat T wave and slight downward convexity of R-T wave. Treatment, bed rest, regular diet. Digitalized and maintenance since March 13. Cardiogram made April 10, condition improved. Diagnosis: Myocardial insufficiency.

### CASE 3.

Male; white; age 34; occupation, salesman.

Family history: Negative for tuberculosis and heart disease.

Personal history: "Membraneous croup" in early childhood. Influenza six or seven years ago. Symptoms suggestive of pulmonary tuberculosis in 1921; night sweats, fatigability, cough, loss of weight, positive sputum, 1924. Positive x-ray, 1926. Worked until November, 1926. Hospitalized in 1927, aphonia. No improvement. Edema of face and extremities, three months prior to admission to this hospital. Periodic diarrhea.

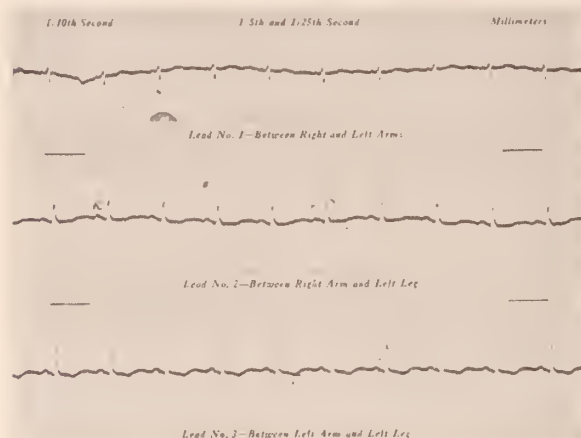


Fig. 3

Admitted to this hospital, November 26, 1929. Diagnosed tuberculosis pulmonary, far advanced "C." X-ray indicated far advanced tuberculosis left, marked lung contraction and large cavity, moderately-advanced fibrotic right. Displaced heart. Laryngitis, tuberculous. Heart study December 1, cardiogram made (Fig. 3). Rate 100, sinus rhythm; inverted R lead 1; low voltage of all deflections; flat T wave in leads 2 and 3 and inverted in lead 3; low P wave in all leads. Sedimentation test: index, 33 mm., markedly active. Urine: specific gravity, 1.008; albumin, 0.1 per cent; occasional fine granular cast. Blood chemistry: NPN, 31.5; urea N, 12.4; creatinin, 1.2; uric acid, 1.6; chlorides, 412; sugar, 12.5. RBC, 3,400,000. Leukocytes: 19,200. PM, 85. Hemoglobin 70 per cent.

Symptoms: Edema, general, marked extremities and genitals. Periodic diarrhea. No marked respiratory embarrassment. Urine output much below normal. Temperature range, 36-37.8; pulse, 80-100 on admission. Sputum negative for tuberculosis.

Wassermann negative. Treatment: rest, low-liquid, low-protein diet. Digitalized. Ammonium chlorid, 60 gr. daily; novasurol intravenously, daily, beginning with 1 c.c., increased to 2 c.c., continued five to six doses. Intake, 4th day, 1300 c.c.; output, 1800 c.c. 6th day; intake, 1450 c.c.; output, 2600 c.c. Edema gradually subsided. General condition improved. Maintenance does digitalis continued to date.

January 3, 1930: Temperature, 36-37. Pulse, 72-90. Blood chemistry: NPN, 32.3; urea N, 12; creatinin, 1; uric acid, 1.4; chloride, 460; sugar, 111.

February 13, 1930: Urine: specific gravity, 1.010; albumin, 0.02 per cent; numerous fine granular casts.

February 13, 1930: Urine: specific gravity, 1.010; improvement in T wave. Pulse and temperature unchanged. Urine same.

March 21, 1930: 24 hour specimen urine: 1400 c.c.; reaction, acid; specific gravity, 1.015; albumin, trace; occasional WBC; fine granular casts; moderate amount. Total N, 21.2; urea, 41.6; creatinin, 0.8; uric acid, 0.7; chlorides, 14. Blood chemistry: NPN, 40; urea N, 16.6; creatinin, 1.2; uric acid, 1.62; chlorides, 466.4; sugar, 80. Blood: RBC, 3,300,000; leukocytes, 11,800; PM, 75; hemoglobin, 70 per cent. Basal metabolism rate, plus 0.43 per cent. Vital capacity, 1.4 liters. No edema, patient comfortable, up and around ward.

Diagnosis: Myocardial insufficiency; nephritis, chronic, interstitial.

### CASE 4.

Male; white; age, 30; occupation, real estate and insurance agent.

Family history: Father died of apoplexy.

Personal history: No history of infectious disease other than influenza while in service. Discharged, December, 1918: no disability noted. Worked as bank clerk. In 1920, began losing weight, pulse rate increased. Was told that he had high blood pressure. Continued to work, but symptoms increased. Diagnosed pulmonary tuberculosis in 1927. Sputum positive.

Admitted to this hospital, June, 1929. Diagnosed tuberculosis, far advanced "C." Fibrosis right upper. Almost complete destruction of left lung. Temperature range, 36.6-38, gradually receding to normal range within two weeks; pulse, 110-130; usual after first week, 80-120. Normal weight, 175; present weight, 107. Blood pressure: systolic, 98; diastolic, 70. Urine: specific gravity, 1.030; albumin, .2 per cent; numerous fine granular and hyaline casts. Sputum, positive. Cardiogram (Fig. 4) made

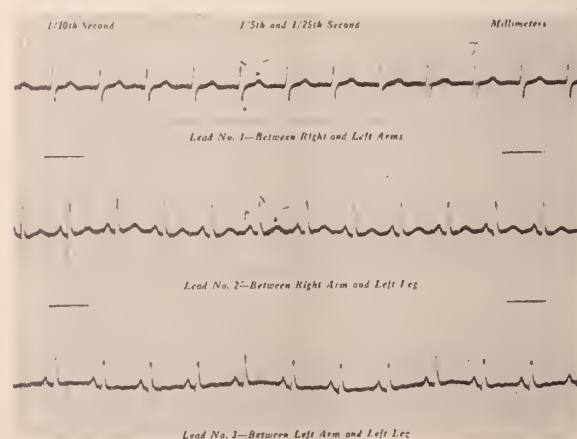


Fig. 4

June 14, 1929: rate 120, sinus rhythm; low or absent P in lead 1, low T in leads 1 and 2 and isoelectric lead 3; R and S practically equal in lead 1. Blood pressure: systolic, 110; diastolic, 80. Treatment: rest,

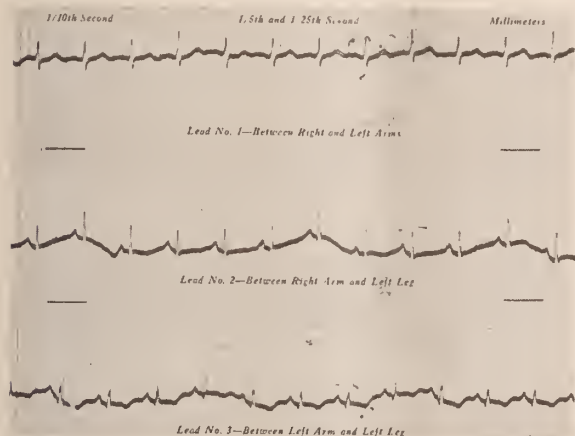


Fig. 5

symptomatic. Condition became weaker. Urine same. Temperature within normal range. Pulse, 110-120. September 29 complained of dropped heart beats and dyspnea. Cardiogram, rate 120, T wave slightly flatter in leads 1 and 2. Patient slightly cyanotic. Systolic murmur at apex. Second pulmonic accentuated. Soon after this date patient began to show signs of edema of lower extremities. Dyspnea and cyanosis more marked until November 24, when patient was digitalized and kept on maintenance dosage for six weeks. Edema increased. Dyspnea more marked. Ammonium chloride and novasurol administered. Fluid limited; poor response on account of patient's failure to cooperate. Forced to cease efforts to eliminate. Symptoms increased in severity. Cardiogram (Fig. 5) made December 29: rate 120, isoelectric T in lead 2, inverted lead 3, voltage of all deflections lower. Patient approaching death. marked edema, dyspnea, cynosis, etc. Patient died, January 3, 1930. No autopsy. Heart death.

Diagnosis: Myocardial insufficiency.

#### CASE 5.

Male; white; age, 36; occupation, clerk.

Family history: Negative for pulmonary tuberculosis or heart disease.

Personal history: No infectious disease except for pneumonia in service. Diagnosed tuberculosis in 1919. Under medical supervision at home and in hospital since that date.

Admitted to this hospital, November, 1928. Diagnosed tuberculosis, far advanced, active "B"; large cavity right upper, remainder of lung opaque. Normal weight, 150; weight on admission, 136. Blood pressure: systolic, 106; diastolic, 78. Temperature range, 36-37.2; pulse, 62-110. Urine, negative; Wassermann, negative. RBC: 4,000,000; leukocytes, 11,400; PM, 77 per cent. Sputum, positive.

Clinical Course: Ambulant type. Developed symptoms of toxemia, rise in temperature and pulse, March, 1929; symptoms persisted to about May first. Phrenic nerve evulsion, left, May 31, 1929. Normal temperature resumed and continued. Rise of diaphragm could not be detected. Patient had frequent passes; continued to feel good until middle of January, 1930, when he began to complain of digestive disturbances. No serious symptoms until March 1, when he began vomiting, also had

diarrhea. Urine: 0.10 per cent albumin; few granular casts. Sputum, negative. Developed edema of lower extremities about March 15, 1930. Cardiogram (Fig. 6) made. Rate 98, sinus rhythm; low voltage all deflections except P; isoelectric T lead 1, inverted leads 2 and 3; P-R interval, .16 second. Diagnosed myocardial insufficiency. Blood chemistry—NPN, 39.9; urea N. 15.2; creatinin, 1.6; sugar, 117. Blood pressure: systolic, 100; diastolic, 80. Digitalized, March 19, 1930. Marked anastrea below waist-line, including genitals.

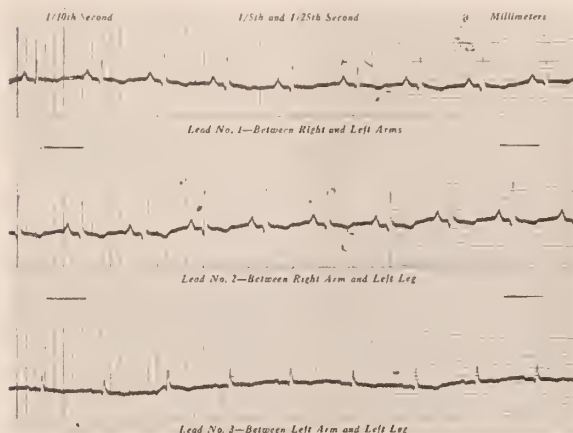


Fig. 6

Treatment: Digitalized. Ammonium chloride, 60 grs., continued 15 to 20 days, reduced to 30 grs. daily. Novasurol intravenously, 1.2 c.c., March 19 and 20; 2 c.c. March 21, 22, 25, 28 and 31; April 2, 4, 6, 8, and 10, 1.2 c.c.; on April 12 and 14, repeat. March 21, 1930: intake, 1080 c.c., output, 660 c.c. March 22, 1930: intake, 1260 c.c.; output, 1185 c.c.; March 25, intake 2280; output, 1320. March 27: intake, 1380 c.c.; output, 1590 c.c. March 30: intake, 1290 c.c.; output, 1560 c.c. April 4, intake, 2040 c.c.; output, 1920 c.c. April 7: intake, 1800 c.c.; output, 2460 c.c. April 10: intake, 2700 c.c.; output, 4500 c.c. April 14: intake, 2010 c.c.; output, 120 c.c. April 17: intake, 1350 c.c.; output, 3270 c.c.

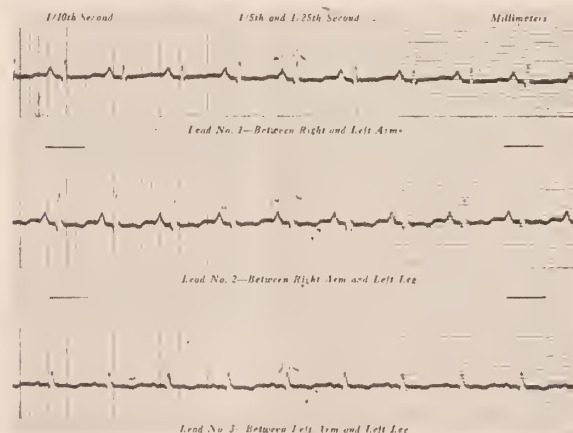


Fig. 7

Free of edema, free of symptoms. Patient sitting up, comfortable. Cardiogram (Fig. 7) made. Rate 90, slight increase in P-R interval; variation in amplitude of R. Condition improved for a time, then relapsed. Blood pressure: systolic, 130; diastolic, 110.



Urine: albumin, 0.25 per cent. April 21, 1930: Urine: albumin trace, few coarse and fine granular casts.

Diagnosis: Myocardial insufficiency; nephritis, chronic, interstitial.

### CONCLUSIONS

Any infectious process existing within the physical organism has its effect upon the vital organs. It may be temporary and leave no impairment of function or there may occur a permanent decrease in the organic reserve force.

All normal stimuli are dependent upon a healthy blood stream and the blood itself reacts upon the heart, nourishing the cellular structure in proportion to the essential elements contained therein. In tuberculosis—a chronic infectious disease, releasing to the blood stream daily its quota of toxins, taxing the organs of digestion, in many instances, to the extreme degree, disturbing the metabolic force and upsetting in general the nutritional scheme, destroying the pulmonary tissue and diminishing aeration space—it is but reasonable to assume that permanent damage to the heart will result.

Our experience in hospital service during the past ten years—the clinical observation of a considerable number of cases of pulmonary and other forms of tuberculosis, together with a fairly careful study during the past year (including electrocardiographic records of more than a hundred cases presenting symptoms suggesting cardiac dysfunction) leads us to conclude that diminished cardiac reserve and impairment of tonicity and contractile power, as well as frequent disturbance in other physiological function, is a much more common complication of pulmonary tuberculosis than has generally been recognized. Also, that myocardial insufficiency occurs more frequently among the chronic tuberculous patients than it does in an equal number of non-tuberculous individuals of the same age encountered in the ordinary routine of clinical experience, and that the degree of cardiac impairment is not necessarily in direct proportion to the extent of pulmonary lesion or degree of nutritional disturbance. It is not an uncommon experience to see patients die of tuberculosis, simply waste away, death apparently result of respiratory failure, without showing any clinical evidence of cardiac deficiency. On the other hand, we have often recognized myocardial insufficiency in the well-nourished, ambulant type with a minimal or moderately advanced, possibly inactive, tuberculous lesion. We do not mean to imply, however, that all myocardial insufficiency occurring in patients afflicted with tuberculosis is a direct result of such lesion.

The importance of the cardiogram as a di-

agnostic aid in myocardial insufficiency, whether it be associated with a tuberculous lesion or not, remains undetermined. It occurs to us that a further observation of the relationship of clinical findings and electrocardiographic changes is worth while. If the electrocardiogram does nothing more than to stimulate more careful observation of heart function in tuberculosis, it will have served a useful purpose.

The failing heart associated with tuberculosis is entitled to application of the same therapeutic procedure as that given similar condition found in non-tuberculous cases. The response of therapy may not be so gratifying but, in many instances, we should be able to bring about a more comfortable state and even prolongation of life.

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### ARTHRITIS IN RELATION TO INDUSTRY

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(Read in the Symposium on Industrial Surgery and Medicine, at the thirty-ninth annual meeting of the Arizona State Medical Association, held in Phoenix, April 24 to 26, 1930).

A considerable literature has been accumulating during the last few years concerning the pathology existing in cases of injury to the spine and to the larger joints, in which the patient complains over a longer period of time than is usually required for recovery in similar cases. As x-ray technic improved, changes in the bones and joints were demonstrated which formerly were not suspected, and as these changes were manifestly acquired over a period of time, the question of the responsibility of the trauma for the condition became acutely controversial in courts and before industrial commissions. As the number of cases increased, and large series were studied, opinion began to crystallize that the trauma is incidental to a prior-existing disease, and is instrumental only in an aggravation of the symptoms which then persist indefinitely.

This opinion is probably fairly well established among those who are doing con-

siderable industrial work, as examination of large numbers of spines, as well as other joints, by x-ray, reveals a surprising number of both sexes who present definite changes in bone, cartilage, and fascias, many of whom are entirely without symptoms until they get hurt.

Our own opinion has undergone what amounts to a reversal in the last ten years, and it is with regret that we remember quite a number of cases that we believed were out-and-out malingerers and whom we treated as such, which undoubtedly belong in this class of cases of chronic arthritis, so-called. The classification of these diseases is not at all satisfactory at the present time, as there are probably several different conditions, now grouped under the general head of arthritis, which could and should be differentiated according to the pathological process actually present.

Arial W. George, of Boston, who has had an enormous experience as roentgenologic referee of the Industrial Accident Board of Massachusetts, in a paper read at Kansas City in 1925, proposes a rough classification which seems as good as any:

#### THE GROUPING OF TYPES OF SPINAL ARTHRITIS

"In approaching the subject of so-called arthritis of the vertebrae, in a broad sense, three general groups appear with more or less characteristic changes.

"(1) The first group, which we do not consider as definitely the result of arthritis, show hypertrophic changes appearing on the margins of the vertebrae, generally in the anterior aspect. These changes are characterized by spur formation without complete bridging between two vertebrae, and may be local to one body or general in all bodies of the vertebrae with possible exception of the upper cervical region.

"(2) The second group are those cases where there are structural changes of the vertebrae or scoliosis with wedging of various bodies and marginal deposits, usually more excessive on the concavity of the curve than on its convexity.

"(3) The third group show changes between the bodies, such as calcification apparently of the intervertebral cartilage and deposits on the margins of the vertebrae. This, as a rule, is general through all the vertebrae excepting the upper cervical region."

In addition, it seems as though the condition described by Fred Albee of New York as myofascitis, should be included.

Etiologically considered, there is a probability that focal infection plays a part in all of these types, for it is the exception to find a workman about mines with a clean mouth

and throat. Pyorrhea and apical abscess are so common as to seem normal to these men. In addition, they often suffer from constipation and fecal stasis, in the cecum especially. The diet is almost wholly meat, eggs, bread and potatoes, which will induce arthritis, hypertension and cardiorenal disorders in any human who lives on it long enough. Albee ascribes to these factors the high incidence of myofascial induration, stiffness and pain in injured backs, and has had good results by treating the colonic stasis by irrigations, instillations of cultures of colon bacilli, and the oral administration of alkaline powders. Another etiological factor is undoubtedly the normal reaction of the tissues to stresses and strains constantly repeated, and to postural habits inducing compensatory proliferation; and still another is the chronological factor taking into account those changes induced by age alone. Garvin, writing from the Mayo clinic, states that, in over two thousand radiographs taken mostly for gastro intestinal or genito-urinary diagnosis in persons past fifty years of age, sixty-seven per cent of men and forty per cent of women revealed hypertrophic arthritis of the spine, which may be interpreted to mean that these patients had proliferative bony changes as shown by the x-ray, and that the vast majority were symptomless, and, therefore, that most of the changes were not the result of a true inflammatory arthritis.

The importance of the condition to industry has been emphasized by Louis W. Allard, November, 1929, in a paper based upon his own experience reinforced by a questionnaire addressed to industrial compensation boards, and to thirty-six leading orthopedic surgeons. The consensus of opinion received from compensation boards was that there are a large number incapacitated from back injuries other than fractures, in which the leading symptoms indicate some form of arthritis, but records are confusing and incomplete because medical reports are not made in terms of disease, but of trauma, and the common tendency is to attribute all of the disability to trauma, indicating that a more general agreement among reporting surgeons, as to terms and ideas of underlying pathology, is necessary before statistical information of value may be obtained from this source.

The consensus of opinion from the surgeons seemed to be that arthritis exists very generally among men over forty years of age, and produces disability out of proportion to the injury, ranging from a few weeks to permanent partial disability. From this quite comprehensive study Allard concludes:



"(1) Spinal arthritis is a common affliction of adults, especially the laborer.

"(2) Arthritic subjects are prone to more or less disability from injuries that would not affect a normal person.

"(3) Disabilities complicated by arthritis demand a far longer period of convalescence than similar disabilities in normal spines.

"(4) The victim of well established spinal arthritis is not a normal man. His efficiency is lowered. He is awkward and often distracted by discomfort, easily fatigued, and an easy prey to minor accidents. He is an industrial hazard.

"(5) Patients with recognized arthritis, properly advised, may be retained in selected occupations for years."

Clarence E. Rees, impressed by the long-continued disability and the confusion existing in the industrial commissions' rulings on these cases, suggests active medical treatment with a view to improving the condition of the patients so that they may be returned to some form of gainful work.

Cushway and Maier, of Chicago, reporting on routine x-ray examinations before employment, mention the large number of congenital anomalies of the spine discovered, forty-four per cent, and enumerate 6.3 per cent of cases of proliferative changes at all ages. They conclude:

"(1) Anomalies of the vertebrae are very common and do not necessarily cause painful backs.

"(2) Roentgenologic study of the spine should be made of all employees in industries in which injury of the spine is common.

"(3) This form of examination will eliminate those unfit for certain types of labor.

"(4) Just compensation to the injured will be certain as this form of examination will definitely fix the date of injury within the term of employment."

This agrees well with our own experience, in which we have been so fortunate as to have a large percentage of young men under forty employed, but in late years the men who have grown old in the service are presenting more and more cases of this disease with its consequences, and we believe that we should work steadily to reach a common ground of understanding as to just what this condition is in its multiple forms, or separate entities, as the case may be. We must learn to classify these cases so that selective employment may be based upon sound premises, and cases may be sent up to the industrial commission with some uniformity of opinion as to the part played by arthritis and that played by trauma. In attacking this problem in a practical way, it seems clear to us that every applicant for employment should have a real physical ex-

amination, including x-ray of chest, spine and pelvis. That we should try to classify these cases presenting evidence of bony change as infectious, postural and habitual, compensatory, or chronological. The clearly infectious and progressive cases must be excluded. The postural and chronological may be employed in the less hazardous kinds of work, and encouraged to help themselves by dental treatment to guard against infection in the affected joints, dietary changes toward the base, or alkaline, types of diet, and against unusual strains not required in the work they do.

It would be a simple thing to institute so rigid a physical examination as to totally exclude from employment all but selected men, but whether it would be good business is another question, and, so far as I know, it is not the desire of the leaders of industry in the southwest to do so. The industry must bear its full proportion of the consequences of wear and tear inflicted on the men they employ; the great problem is to have it bear equally on industry as a whole instead of on the particular enterprise that happens to be employing a man when his breakdown occurs. And, so far as arthritis of the spine and larger joints is concerned, all the work the man has ever done in his life, every year that goes behind him, has contributed its part to his physical condition at fifty, and it cannot by any stretch of the imagination be construed as an occupational disease, referable to any particular kind of work.

As the contribution of industry, and the general hospitals as well, toward the better understanding of this problem, it appears that accurate records of all cases of spinal arthritis discovered might be kept, with follow-up notes as to the progress and final fate of these patients. An attempt at classification according to the suggestion of Dr. George, and the reporting regularly of the facts ascertained, at our annual meetings, would be little enough for us to do. If the subject were thus kept alive in the minds of all of the men reporting to the Industrial Commission, eventually more uniform opinions might result, which would be of great benefit to the employee, the employer, and to the state.

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## INFECTIONS OF THE HAND AND FINGERS

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A human being is the only living creature with a perfectly developed hand; that means man has an organized part of his anatomy capable of many different and delicate movements and so specialized that it can perform the most intricate and difficult work of daily life. Apes and other species of animals can use their upper extremities for some movements like man, for instance, for grasping; but that alone does not constitute a hand by any means. A comparative study of the human hand and the corresponding extremity of the highest developed animal shows great differences of structure and form.

One becomes conscious of the value and importance of a hand only when one is deprived temporarily of its use, for instance, by an injury, and has to carry it in a sling. We are almost helpless without the hand and depend on aid from others for the most necessary and most simple activities. When we get up in the morning with a bandaged hand, we cannot dress ourselves, we cannot wash our faces, we cannot bring the spoon to our mouths and have to be fed; we balance poorly when we walk about and must be doubly careful lest we stumble and fall, without the protection of our outstretched hand. We use the hand constantly from morning till night. All the achievements of the human race are more or less due directly or indirectly to the hands. The words, "handicraft," "manufacture," "handy," "handle," "maintain," "manage," indicate what we achieve in our civilization with that part of our body. In all of these words we find the root word *manus* (hand.)

There are three things which distinguish man from the animal. He is not much different in his anatomical structure and his physiological functions from the beast; but in these three things he differs: First, the brain with its reasoning power and free will; second, the erect posture and ability to walk; and third, the well-developed hand. These discriminate man.

Whatever of art, science and conquest he can boast of, is to a great extent, referable to the hands. He lives by his hands; he sows, he plants, he reaps with his hands. He builds with his hands; he brings forth the resources of nature from the earth with his hands. With his hands he uses instruments to create almost everything that he makes use of in his daily life. The arts, particular-

ly music, are greatly dependent on the highly developed skill of the hand. The violinist, the piano player, the cornettist, all use their fingers in their art. The paintings and sculpture are produced by the hand. It is true that the conception of art is in the brain, but the execution is in the hand.

For the working class, the hand is indispensable. Without the full use of the hand and arm, the working man is handicapped. He earns his daily bread by his brawn. True, the brains are most important and are the chief moving power for progress; but the hands are essential in the work of the world. Considering all these facts, we can understand the importance of the development, and particularly the importance of conservation of this most precious adjunct of our body.

The general practitioner (we all more or less belong in that class) is seldom called upon to treat a condition which can give him more annoyance than an infected hand, nor one whose treatment is fraught with greater difficulties; and perhaps no subject in the whole field of surgery has been more neglected by the surgeon. Even though the results may be the best obtainable, they are never satisfactory from the viewpoint of the patient, who expects the part to be as good as before, and that in much less time than is usually required; while the compensation to the surgeon, for his efforts and skill in preserving, through a tedious course of treatments, a useful though often a somewhat disabled hand or finger, is always more grudgingly allowed than would be that for a total removal of the same part followed by a quick recovery.

The neglect of this subject by the general surgeon probably arises from the fact that few of these cases are referred to him, and, like other people, surgeons prefer to talk or write about that which comes most often under their special care.

A knowledge of the gross anatomy of the hand is necessary to the intelligently successful treatment of any infection in finger or hand.

The most common site for entry of infection is the distal phalanx. Under the nail, filling up the interval between it and the bone and strongly adherent to both, is a fibrous layer—the matrix of the nail. This layer has very slight resistance to infection; once infected, there is no room for the inflammatory exudate to be thrown out. Even very slight inflammatory reaction produces such pressure between bone and nail that the blood supply at that point is cut off or diminished and spread of the infection ensues. This is why infections of the matrix of



the nail are so slow in getting well. The quickest and best way to deal with an infected matrix is to remove the portion of the nail overlying the infected area, and apply a moist, mild antiseptic or saline dressing. Keep the part at rest and change dressings often. Never allow the dressing to become dry before healing begins; thereafter, it is better to use an ointment. If the infection of the matrix of the nail spreads to the soft tissues surrounding the nail, it is usually necessary to remove the nail as before, and with a scalpel make an incision into the infected tissue on each side of the nail. This should be done under anesthesia as it can be properly done **only when the patient feels no pain**. The incision should extend nearly half way from the edge to the fold of the joint. Apply a mild antiseptic dressing, put the finger on a splint and the arm in a sling, and keep immobilized until well.

In infection of the pulp of the finger, the intense pain and throbbing is caused by the fact that joining the skin with periosteum are tough fibrous bands which do not yield readily to swelling. For infection of the pulp the alert physician never waits for pointing of suppuration. An early and free incision, not only through the skin, but down through the pulp, with proper dressings and fixation, will check the spread of the trouble. Incision relieves the tension and it is the tension which causes death of the periosteum, skin and bone, and of all intervening tissues, for the tension soon shuts off the blood supply.

The periosteum over the distal phalanx is often subjected to trauma when the finger is injured. Blood and serum collect under it and these small extravasations are often foci for the development of bacteria lodged there by the blood stream. When bacteria reach such a site the result will most probably be an abscess under the periosteum. The signs are unmistakable. The patient complains of severe pain in the finger, which is constant, throbbing and almost unbearable. The periosteum does not yield readily, and soon a tiny drop of pus has elevated the periosteum from the bone. This process continues until the pus finds an exit, either into the joint or breaking through the periosteum into the pulp. When this happens the relief from great pain is instantaneous and lasts for a few hours, but the pain later becomes quite severe again. Before this rupture of periosteum, there is little or no swelling. Careful examination will always reveal a point of maximum tenderness, which is to be found by pressing gently on the skin with a toothpick or any pointed object. This tender point exists very early in

the disease. Under the tenderest point, between the periosteum and the bone, is the seat of the trouble. Over this point is the place to open, and the knife point should reach the bone here only. A large incision is never needed if one can get the patient early. Often only a very small drop of pus is found. As the pus is quite thick, a saline, or Dakin's solution helps to promote drainage. Dress with gauze moistened with these solutions, change often, and keep the part at rest.

When infection following wounds in the skin or subcutaneous tissue spreads, it does so most often by way of lymphatics. The pus can easily spread in any direction. This explains how it happens that pus can extend completely around the finger and not affect the tendon sheath or periosteum at all. It is a point to remember in opening phlegmons of the fingers, for if one cut deeper than the plane where he encounters the pus, and if the incision is over a tendon sheath, he may cut through the fibrous tendon sheath and unnecessarily open its synovial lining. This, too, may follow the insertion of drain or pack, the pressure of same causing necrosis of tendon sheath. The lymphatic vessels pass down the sides of the finger, converge in the web, unite and, crossing the web, enter the palm or pass to the back of the hand. This, as well as the loose nature of the subcutaneous tissue there, explains why it is that the back of the hand undergoes such great swelling in all these infections.

This is simple lymphatic edema—very seldom does pus so spread—but the web between the fingers is the place to look for the first metastatic abscess in finger infections. Bacteria—not pus—get into the lymph channels and, flowing back, reach the web. The fatty structure of the web with its poor supply of blood, makes a good culture medium. Unless incision and drainage by splitting the web right open, is done early, a deep palmar abscess will probably occur. The pain in a web infection is not great and very often is overlooked because of the great amount of pain the patient has in finger, until it is too late to avert a much more serious palmar abscess. We must certainly be on the lookout for web infections in all finger infections, especially those of skin and subcutaneous tissue, if we are to diagnose and treat them early enough to prevent palmar abscess. A little tenderness in the web calls for incision—never wait until the patient calls your attention to pain in this region, nor until fluctuation occurs.

In opening a web, cut straight through it for at least one-half inch and, if pus is not

reached, proceed further toward the palm with blunt dissection. Insert a thin piece of rubber to keep the edges open and dress the fingers wide apart with moist dressings.

The fat in the web comes in actual contact with the tendons of the lumbrical muscles and the common flexors of the finger. Each tendon is surrounded by loose areolar tissue, so it is easy for pus, having once come in contact with a tendon, to dissect its way along it.

Infection of the web of the first space is in a class by itself, inasmuch as it is nearly always intermuscular from the beginning. It follows infection of either the thumb or index finger and can occur by direct extension of pus along perifascial lymph spaces or metastatic through ordinary lymph channels into the intermuscular space between the first dorsal interosseus muscle and the adductors of the thumb. Tenderness on deep pressure at this point should prompt immediate incision into this space. The incision extends through the skin, superficial and deep fascia until the edges of the muscles are seen. The lines of their fibres cross each other. The space between the two is opened by blunt dissection and the pus will be found there. A drain is inserted to the bottom of the abscess cavity. The whole hand and forearm are immobilized with thumb and index finger slightly separated.

An abscess in the web can readily become a palmar abscess by dissecting its way around the edge of the adduction of the thumb or along the palmar arch or it can spread easily to the wrist along the synovial sheath of the flexor pollicis longus. In dealing with abscess of this web no muscle is cut. Through and through drainage is never used.

We shall briefly consider abscess in the palm. You are told of three compartments. The partitions between the compartments are none of them strong, and pus may pass from any one compartment to any other, for the partitions fail as the bases of the phalanges are approached. The partitions are of fascia and are backward extensions of the deep palmar fascia. The outer compartment lodges the thumb muscles, the inner one the flexor tendons and short muscles of the little finger, while in the middle we have the flexor tendons and lumbricals of the middle fingers, together with vessels and nerves. Tendons and muscles must be surrounded with loose areolar tissue, or they will work stiffly, and infective material spreads readily through loose areolar tissue. The deep palmar fascia is strongest over the middle compartment, and over all compartments the

deep palmar fascia thins out, becomes cribriform, and finally fails entirely as we proceed distally. It disappears first in the interdigital spaces, leaving the digital vessels and nerves uncovered by it as they enter the webs of the fingers. Here the superficial fat of palm and web becomes continuous with fat and areolar tissue under the deep palmar fascia. One can thus see how readily a primary superficial abscess can become a deep palmar abscess by direct extension, because the fascia forming the roofs of the palmar compartments is so strong and unyielding, and abscesses in any of the compartments may spread well up into the wrist or forearm along the tendons or into its neighboring compartment long before it points on the surface of the palm. The swelling in the palm is, for the same reason, never marked until the abscess is well advanced.

Swelling on the back of the hand is always marked. But this swelling alone should not induce one to incise the dorsum. It is nearly always lymphedema, because, as before mentioned, the lymphatics drain toward the dorsum, but pus does sometimes collect here in the perifascial lymph space, and here, as elsewhere, localized deep tenderness is an early and never-failing sign. The tender spot should be opened as soon as found. To "squeeze out" the pus is the most primitive surgery.

How to open a palmar abscess is a real problem and whether to incise vertically or transversely is a moot question. A transverse incision will remain open better while the fingers are extended, and the fingers should always be dressed in extension, but a transverse incision in the lower part of the palm exposes the digital vessels and nerves to danger, while a vertical one higher up imperils the palmar arch. The patient should be anesthetized and an Esmarch bandage applied. One cannot use an Esmarch bandage to advantage unless the patient is anesthetized; hence the need for a general anesthetic and, besides, a local anesthetic in an inflamed area is not often successful. Use whichever incision you prefer, but identify the structures before you cut them. Cut down to the deep fascia and proceed with caution. Divide the deep fascia and then lay down the knife. on deep pressure, go straight on with blunt dissection until the pus appears. Do not pack, but insert soft rubber and fasten it in the wound. Any drainage material that presses on a tendon with any force for even a few hours, may cause local death of the latter. If a tendon, or part of one, dies, it takes four to six weeks to separate and come away. Immobilize the fingers, hand and



wrist, keep fingers in extension and use the hot bath or moist dressing.

Every surgeon remembers the synovial sheaths of the flexor tendons. He knows that there is around each set of flexor tendons, are they lie on the phalanges, a strong fibrous tunnel through which they run and which holds them to the bones. But inside this fibrous tunnel is a synovial bursa, as it were, which surrounds each set of tendons. up to the middle of the palm, while those for the thumb and little finger reach right up to join the bursa under the anterior annular ligament. When pus is found in any of these synovial sheaths, that sheath is to be laid wide open over the place where the pus is, and for at least one to two centimetres above and below this. When the tendon sheath is involved, any attempt to move the tendon causes pain, and there is local tenderness over it.

When pus has invaded the great bursa at the wrist, the anterior annular ligament is cut through and the hand and fingers dressed in hyperextension and left so until healing is well advanced.

When the hot bath is used, the part must be kept on the splint while in the bath, and the solution should be as hot as can be borne without blistering. On no account should the temperature of the bath fall below 110 F. In weak patients it is not well to continue the bath day and night, because of fatiguing the patient; therefore, during sleeping hours the part, still on the splint, is placed in large, hot packs, wrung out of the solution and wrapped in waterproof cover, and the whole surrounded with hot water bags which are frequently renewed.

If an infection of the palm is properly opened and treated as outlined above, the progress of the disease is quickly checked. The drains are removed in from three to ten days and the wound kept open so that pus cannot be retained and burrow. Active motion is encouraged for a few minutes at a time, two or three times daily, as soon as the drains are removed and gradually these periods of activity are increased and lengthened. Only those too long immobilized or improperly handled fail to regain useful function.

#### **THE RELATION OF THE MEDICAL FRATERNITY TO THE STATE INDUSTRIAL COMMISSION**

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The primary function of the physician and surgeon is the skilled coping with disease

and injury. The services of the physician are given upon request and, since most people do not request the services of a doctor until they have become afflicted with some disease or injury, his services almost always embrace the treating and curing of some condition. In this connection, his problem is, first, the proper diagnosis of the condition for the treatment of which he has been called, and, second, the determination of the proper treatment therefor.

The industrial surgeon has the same problem of diagnosing and treatment. In addition, however, he has, in many cases, the additional problem of etiology. In the handling of private cases the etiological side is usually of only incidental character. So long as the physician knows the diagnosis and the treatment, he is not so much concerned about the etiology. When the etiology of a private case does require consideration, it is usually only for diagnostic purposes, because the history of the individual preceding the calling of the doctor often may throw light upon the proper diagnosis.

But in industrial cases the etiology is always important. The etiology of most cases is so apparent and plain that it is not a problem. In the handling of industrial cases the Industrial Commission is vitally interested in correct diagnosis and proper treatment, and equally in the matter of etiology.

A good many of the difficulties that confront the Industrial Commission in the handling of the thousands and thousands of industrial cases that arise each year, are due to faulty diagnosis and ignorance, on the part of the attending doctor, of the etiology of the condition observed.

The impression that one gets is that the average doctor attributes to the Industrial Commission a sort of omniscience in medical matters, and, when a problem is presented, instead of wrestling with the problem himself or doing his best to solve it, the tendency of the doctor is to throw up his hands and pass it on to the Industrial Commission. Then, again, many doctors, if they do give some expression upon a technical point, will make it a very perfunctory opinion, analogous to a "horseback" or "curbstone" opinion of an attorney. Such superficial opinions are usually of but little value and are frequently harmful. If the injured employee is informed of such opinion he sometimes becomes very bitter when his claim is ultimately rejected on the basis of contrary medical opinions.

In such cases the employee never gets the notion out of his head that he is entitled to compensation; and he spends much money

which he would not spend, in consulting lawyers and in legal proceedings which would never have been instituted had it not been for the encouragement and confidence in the propriety of his claim which is impaired by some careless statement or opinion of his doctor. For example, in one case an employee who had sustained a fracture of his leg, developed, some time later, a condition on one of his toes which, when the facts were fully investigated, had no connection whatever with the previous injury which he received. However, one of the doctors, in good faith, wrote a letter to the Commission in behalf of the employee, theorizing as to the possibility of a connection between the injury and the subsequent condition of the toe. It appeared that the real cause of the trouble was a new pair of shoes which the employee had purchased shortly before the second condition developed. Yet the employee had to have a hearing. He appealed to numerous politicians and really caused quite a stir.

However, while it is desirable that doctors refrain from careless expression of opinions, so as not to encourage the filing of claims that lack merit, the most important possibility of improvement lies in the doctors giving more thought, study and cooperation to the matter of etiology, to the end that the Commission may render prompt and correct decisions on medico-legal problems. While the Commission likes to render its work as pleasant as possible, and bespeaks the cooperation of the doctors to this end, the chief desire and aim of the Commission is that its decisions be correct, and also that they be made promptly.

A great number of the cases that arise present medical problems and, strange to say, there are among the medical fraternity many differences of opinion in matters of etiology, which differences of opinion are, in many cases, due to ignorance or carelessness.

If a man goes to a doctor for treatment for a non-industrial condition and later files a claim for compensation with the Commission, the Commission may know that the case is noncompensable. The Commission may have no doubt whatever that there is no connection between the alleged injury and the condition for which the patient is being treated. Yet if his attending physician files with the Commission a report stating that there is a connection, the Commission may not under the law, reject that claim. In such a case, since the evidence is uncontradicted and since such uncontradicted evidence legally establishes the employee's claim for compensation. If the Commission so regards the case, it must, before it can deny such a

claim, go to the trouble of obtaining and putting into the record contradictory evidence. In such cases such evidence can always be obtained, because such evidence is correct and proper and just, but it means that the Commission must go to the expense of having the man examined by some other doctor, of a hearing, and of having this other doctor testify. Then, again, it is not pleasant for a doctor to take issue with a colleague in such a matter. And, in addition to all the expense, there is always delay. The reason for this is that the law does not endow the Commission with the power to render decisions, even though such decisions be correct, if they are contrary to the undisputed evidence. Since many claims are presented and are accompanied by medical evidence regarding the etiology, which is incorrect, unsound and illogical, it is necessary for the Commission, before it can reject such claims, to take such steps as may be necessary to place in the record of such case, evidence justifying the rejection of such claim.

For example, if a woman is struck on the breast during her work and a month later is found to be afflicted with a large carcinoma of the breast and the doctor in charge of the case reports that the carcinoma is due to the injury or alleged injury, even though the Commission may have received expert testimony in many other cases to the effect that there could not be an etiological connection between such carcinoma and an injury of such recency, the Commission may not reject such claim without going to the trouble and expense of obtaining contrary expert testimony in the particular case.

If, in such a case, the only testimony in the record, was that of the injured party and her doctor, and the doctor testified that there was a causal connection between the carcinoma and the injury, and if the Commission on such evidence rejected the claim, the Supreme Court, upon review, would reverse the action of the Commission. If, however, the record of the Commission contained the report of another doctor to the effect that there could not possibly be any connection between the injury and the carcinoma, in view of the shortness of the period of time elapsing, then the Supreme Court would uphold an award of the Commission rejecting the claim, because such an award would be supported by evidence.

The point I am making is that there must be, in each individual case, evidence in support of the Commission's decision, whether the decision be in favor of the claimant or against the claimant; and every time the attending physician supplies the Commission



with an opinion upon the etiology which is incorrect, he not only does something which may result in an erroneous decision on the part of the Commission in the event the Commission does not perceive the error in his opinion, but he adds to the delay attending the determination of the case before the Commission and increases the expense of administering the law.

Of course, everybody makes mistakes. A man who makes very few mistakes but who does very little constructive work is, relatively speaking, more inefficient than a man who makes a great number of mistakes but whose mistakes are less in percentage to the amount of constructive work he does. It is not my purpose to point out mistakes just for the sake of doing so. The purpose of this paper, however, is to point out, if possible, some of the avenues which may lead to increased efficiency on the part of the medical fraternity in its relation to the Industrial Commission.

It seems to me that, while the medical men are cooperating to a great extent in the exchange and the dissemination of knowledge among themselves, such cooperation relates chiefly to diagnosis and treatment, and hardly at all to etiology. Accordingly, while we see the medical fraternity gradually standardizing its practices as regards diagnosis and as regards treatment, we still find much conflict and confusion in the field of etiology.

For example, doctors have very little trouble diagnosing an inguinal hernia, and the treatment of a hernia is usually without difficulty. But, as regards the etiology of an inguinal hernia, we find a chaotic condition. Similarly, as regards orchitis and adenitis. We find that such cases do not cause trouble because of wrong diagnosis, or because of wrong treatment, but we do have much trouble because of what we consider to be erroneous conceptions of etiology. We believe that doctors are not reporting orchitis and adenitis as being due to strains or alleged strains as commonly as they formerly did. This may be due to the fact that the Commission has constantly refused to pay compensation in cases of adenitis or orchitis where the same is attributed to an ordinary strain. Yet we still find doctors reporting such cases, using expressions describing the condition of their patient in language such as this: "Orchitis due to strain while lifting sack of coal;" or, "Adenitis from strain of pushing wheelbarrow." The Commission has refused compensation in such cases because it has chosen to accept as correct the views of those doctors who

feel that an ordinary strain cannot cause an adenitis or an orchitis and that employees commonly claim compensation for such conditions when, in fact, they are due entirely to disease.

We have had several cases where hemorrhoids have been reported as due to the strain of lifting and carrying things. We have had other doctors say that they could not be caused by such strains.

As regards hernias, the highest medical authorities have expressed the opinion that a hernia, complete in all its parts, can never arise at the moment of accident or by a single increase of the intra-abdominal tension, be it ever so great; that traumatic hernia is exceedingly rare; that it may occur to any part of the body, but usually not at the site of the normal hernia openings. However, there are many doctors who are testifying in case after case that the hernia was caused by an alleged strain or other relatively mild accident, and a good part of the time of the Commission is taken up trying to disabuse injured employees of the notion that the hernia was caused by a certain strain or accident.

A certain man made a claim for compensation for injury to his foot when a large rock fell on it. While complaining of pain, he returned to his work, nevertheless, upon the doctor's assurance that he had not been seriously injured and no bones broken. He hobbled around, and several months later he claimed again there was something wrong with his foot and an x-ray examination was made at that time, disclosing a large, round callus on one of the metatarsal bones. This was clear evidence that the bone had been fractured. One of the doctors, in good faith, testified that in his opinion the fracture had not occurred from the injury by the rock because an x-ray had been made at that time which was negative. An A.P. and lateral view was made. The x-ray pictures were perfect so far as photography was concerned and there was not the slightest evidence of a fracture showing in the x-ray. The Commission had no doubt whatever but that the fracture did exist nevertheless. It has been proven too many times that such a case is possible. We frequently have cases where a clear x-ray is made and a fracture of two of the metatarsal bones is shown. An x-ray taken subsequently will show callus on three of the bones, from which the doctors infer that there actually had been more fractures than were revealed in the original x-ray.

We receive frequent reports of sacro-iliac slips and x-rays are frequently interpreted as showing sacro iliac slips. Certain ortho-

pedic surgeons of the highest standing have stated that sacro-iliac slips do not occur. One of the doctors said he used to diagnose sacro-iliac slips quite frequently until about ten years ago, but has not made many such diagnoses since and believes that such slips are extremely rare, if they ever do occur. Dr. Albee believes that many of the cases diagnosed as sacro-iliac slips, or sacro-iliac strains, or sacro-iliac relaxation, are really cases where the disability is of toxic origin. He points out that symphysiotomy, pubiotomy, and fracture of the pelvic girdle all strain or separate the sacro-iliac joint to a far greater degree than could possibly result from the trivial injuries that are considered sufficient to produce sacro-iliac strains. Yet, in his experience, the large number of such cases with symptoms referring to the sacro-iliac region had been noticeably lacking.

One of the greatest sources of trouble is the back injury. Unquestionably, thousands of dollars are spent each year for lumbago, arthritis and sciatica. Suppose we have a man whose job is to carry and deliver ice to private dwellings. He has been doing this work for years. Finally he wakes up one morning, telephones his employer he will not show up for duty, and calls the doctor. The doctor calls and finds him running a slight temperature, finds he has a sore throat, infected tonsils and a painful back. The man tells him he strained his back the day previous while carrying ice. In such a case, if the doctor fills out his first report in a perfunctory manner, giving the history of strain of back while carrying ice, and says nothing further, the Commission, relying upon the doctor, will issue compensation checks to that man. It is very likely, however, that that man is suffering from disease and not from injury. Such a case is a typical case. Suppose, instead of straining his back, he claims he strained his wrist, or his ankle, or his knee. If, a few days later, other joints of the body are equally tender and sore, would that not be strong evidence that there was no merit whatever to the claim of injury?

Wherever the disability observed by the doctor does not jibe with the history of incidentally call this matter to the attention of the Commission. He should do so voluntarily given him by the patient, he should specify. He should not wait until he is asked by the Commission, because, as stated before, much reliance is placed in the medical fraternity by the Commission and if the doctor does not call the attention of the Commission to the fact that the claim is without merit,

the Commission will usually assume that it is a worthy case.

However, we will have employees with infected tonsils and sore throats and running a fever, claiming a strain of their backs or of their sacro-iliac joints, not by reason of any real accident, but by reason of the performance of their usual duties, which may involve lifting and straining, and yet many doctors will classify them as disease. Why should there not be a uniformity of opinion as regards the etiology and diagnosis of such cases?

In another case, an individual came to Phoenix, was examined by a doctor for an alleged injury to his eye consisting of abrading or scratching it with a little twig. He was almost blind in the eye at the time he was examined. I don't recall what the exact diagnosis of the condition was, but it did appear that he was syphilitic. However, the doctor seemed disinclined to ascribe the disability in the eye to the syphilis. A few months later he returned with the other eye similarly affected. It was then decided that the case was never compensable at any time; that the condition in the one eye did not come from the condition of the other eye, but that both came from the syphilis.

In that case the Commission relied upon the doctor's opinion, but I had the feeling that, if the doctor had been a little more familiar with the etiology of the condition than he was, he would have saved considerable expense to the Commission.

In another case we had an individual who was blasted, receiving an injury to his eyes and ears and to one of the nerves controlling the iris. His main complaint, however, was shortness of breath. The attending physician could find no evidence of heart trouble and was unable to explain the shortness of breath but, nevertheless, he attributed it to the injury. The man was 59 years of age. Here again is a case where the doctor was ascribing the disability to an injury with nothing more on which to base his opinion than the claim of the injured man that he did not have the shortness of breath before the injury.

Of course the Industrial Commission cannot expect to find the doctors in full agreement in every case. I recall one case of a negro who was claiming a number of symptoms. There was quite a sharp conflict in testimony of the doctors as to whether it was a brain lesion, or as to whether the case was one of simulation or a neurosis. What I do say, however, is that there seems to be no excuse for such widely divergent views among the medical fraternity as regards medical facts and principles. An ordinary



strain or lifting either can or cannot produce an orchitis. It seems that the doctors should get together and determine once and for all just what the true medical fact is. Then, once that is properly and intelligently determined, the finding should be supplied to all the doctors. If the finding is that an ordinary strain of the employment cannot cause an orchitis, then there should be an end to the constant reporting of such cases by doctors as industrial injuries. The same applies to hernias, to sacro-iliac slips, to alleged lumbar strains, to disability due to conditions on the interior of the eye attributed to dust or other objects abrading or irritating the outer part of the eye, to cancer.

Then, again, the Commission would like to know to what extent the time element is important where an employee claims osteomyelitis of his femur is due to a contusion of his thigh. A case was recently reported where the employee claimed an injury occurred about October 2. The doctor who treated him received a history that he strained his back and right thigh while cranking a tractor, and his treatment consisted of the application of liniment. On November 27 the Commission was advised for the first time that the doctor had determined he had a periostitis which had developed into an osteomyelitis of the right femur. There was at no time any sign of ecchymosis, and the only external evidence of injury was a little red mark which was not observed until two days after the alleged injury and, in the meantime, the employee had applied camphor to the skin, which was considered as a possible cause of the red mark. When one of the doctors saw him, about five or six days after the alleged injury, he found the patient's thigh was two inches larger than the other, but there was no tenderness and no marked rise in temperature. About four days later he had a fever of 102 and a great deal of heat and tenderness over the thigh. On November 11, about twenty days after the alleged injury, a considerable amount of pus was evacuated from the leg. An x-ray was made thirty days after the alleged injury, which revealed extensive osteomyelitis. Shortly thereafter the shaft of the femur broke in two by reason of the inroads of the disease.

Another case which frequently gives the Commission difficulty is the one where an employee develops a cellulitis or an abscess in some part of his body and attributes it to a bump or contusion alleged to have occurred some time previously and in which there is usually no external evidence presented. In such cases we usually find sharp differences

of opinion among the doctors regarding the etiology of the cellulitis or abscess.

Back strain, or perhaps I should any back pain, is perhaps one of the principal disabilities which is alleged by workmen's compensation claimants. Usually the symptoms are purely subjective, which adds markedly to the difficulties of the surgeon in deciding whether or not the individual really has suffered a disability. Officials administering compensation laws and the medical directors of such Commissions, are very skeptical of many of the so-called diagnoses of sacro-iliac strains or subluxation, and so-called back strains. If the medical fraternity could develop an increased ability in properly examining and analyzing such cases, tens of thousands of dollars would be saved annually to the employers of the state. The number of cases treated when trauma is not the true cause of the condition, the cost of reviewing medical reports by several different doctors to discover the mistakes made by careless doctors, the employing of medical consultants to help clear up these needless mistakes, and the additional cost of litigation for cases which at first could easily have been settled, all are very burdensome.

Equally as important as the matter of diagnosis, etiology and treatment of industrial cases, is the matter of the doctors' medical bills. We had one case where a man's foot was bruised. There was never an infection nor fracture of any bone. His foot was bandaged up and he was confined to the hospital for ten days; he did not spend his time in bed, but merely was required to be careful not to bump or hurt his foot. For each of those ten days the doctor charged a hospital visit of \$3.00.

I doubt whether any state has a fee schedule that is more liberal than the fee schedule adopted by the Industrial Commission of Arizona. I know that the fee schedule of California is from a third to a half lower. With such a liberal fee schedule there is all the more reason why the doctors should cooperate to their utmost to save the Commission and the insurance companies the expense of undeserving claims. The honest physician—and the vast majority of physicians are honest—desires that his patient shall be restored to normal health and usefulness at the earliest moment. If a farmer of moderate means and not covered by insurance recovers satisfactorily, from the doctor's viewpoint, it is certain that the physician will, both for the sake of the man's own welfare, physically and psychologically, and for the sake of his own fee and the reputation for a quick cure, urge that patient to resume his occupation and become a producer again at

the termination of that time. The patient then returns to work, possibly with some slight or moderate discomfort, but he grits his teeth and does his work. The doctor's reputation becomes enhanced by the patient's friends and associates, the doctor gets his fee sooner and more fully, and the doctor has the satisfaction of a job well done, not only physically, but as regards the attitude of the patient. That, I believe, is the normal attitude of the normal physician toward the normal patient.

If the physician has the patient's interest at heart, he will not see that patient, either at his home or at his office, more frequently than is necessary. Nor will he exaggerate the patient's ills or the possibility of future difficulty. What often happens to the same person, with the same income and the same number of dependents, when covered by insurance? Here, altogether too often, the doctor seems to have a different philosophy as to what his conduct, attitude and bill should be. The patient may be hospitalized where, were he not insured, he would not be. Many x-rays are made which, if the patient were standing the expense, would not be taken, and frequently these are made only at the instance of the patient, often in curiosity, since he knows the insurance company will foot the bill. When the point is reached where the employee would have returned to work, the patient demurs. He describes some discomfort that still remains, and then the doctor laxly suggests that some form of electricity might diminish that discomfort. Again the expenses pile up against the insurance company, not only in the bill of the doctor, but particularly in the time lost to the employee.

Why should a patient with a sprained finger or ankle be required to report to the doctor daily when the only result of the call is the fleeting look at the ankle or the wiggle of the finger and the direction that the patient report again the following day? Manifestly, nothing is accomplished for the patient. It is probably very rarely that a physician deliberately prolongs his treatment for the purpose of enlarging his fee. Many physicians, however, with the best of intentions, see their patients oftener than is really justified by the condition being treated. The effect of this is not only a great increase in the medical bill, but it frequently serves to impress the patient with the magnitude of his injury and, instead of hastening his recovery, it tends to retard it.

No one who has had experience in compensation work for any length of time can fail to appreciate the fact that the mental element is just as important as the physical

element, as regards the problem of getting the man back to work. A man may be restored physically, as far as medical treatment can assist him, but if his mental impression is that he is still disabled, the effect, so far as the insurance company is concerned, is just about the same as though he were still actually physically disabled. The earlier a man can be put back to work with safety, the quicker will be his ultimate recovery, both from the physical standpoint and the mental standpoint.

## PNEUMONOCOONIOSIS

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(Read before the thirty-ninth annual meeting of the Arizona State Medical Association, held at Phoenix, Ariz., April 24 to 26, 1930.)

Pneumonoconiosis is the general term for all affections of the lung which result from the inhalation of dust. It includes anthracosis, due to coal dust; silicosis, due to silica dust; chalicosis, to stone dust; siderosis, to metal dust; and byssinosis, to cotton particles and vegetable fiber dust.

There are two important factors in the etiology of pneumonoconiosis. The first is the character and amount of the dust inhaled, and the second is the susceptibility of the individual to its influence.

The two main types of dust are the organic and the inorganic. Since it is very doubtful if the inhalation of organic dust ever leads to definite pneumonoconiosis, the effects of this form will not be considered.

Any inorganic dust is capable of producing definite pathological changes in the lungs if the exposure is sufficiently long. A slight degree of pneumonoconiosis is found in the lungs of all city dwellers who have reached adult life. The frequency and extent of these changes and the length of exposure necessary to produce them, depend on the amount of the dust and its physical characteristics and chemical composition.

In general, dusts appear to be more injurious as their chemical composition differs from the elements of which the human body is composed. Dust from soft material, as coal, does the least damage to the lung tissues. Dusts from shale, slate, iron ore, clay, limestone, plaster of Paris and cement are relatively harmless.

Dust from quartz, quartzite, flint and sandstone is the most harmful. This is due to its content of crystalline silica or silicon dioxide. It was formerly thought that the hard, sharp edges of the silica particles were responsible for the mechanical injury. However, Gardner was unable to produce fibro-



blastic proliferation characteristic of pneumoconiosis by the use of carborundum, which is almost as hard as diamond and consists of very fine sharp particles. This evidence confirms the belief that silica produces its effect through chemical rather than mechanical action. The finer the dust, the more dangerous. Particles greater than ten microns in diameter cannot pass through the finer bronchioles. Microscopic examination of silicotic lungs has shown that seventy per cent of the silica particles have a diameter less than one micron or one-twenty-five-thousandth of an inch. Hence the futility of respirators.

Wherever silica dust is generated and pollutes the atmosphere that workers breathe, silicosis will be found, varying with the length of time and the degree of intensity of exposure. Silicosis is seen in workers in granite, sandstone, quartz and gritstone. In gold, tin and lead mining where layers of rock contain a high percentage of silica, silicosis is common. It is also seen in the manufacture of grindstones, in sandblasting, in the manufacture of silica brick.

#### MORBID ANATOMY

The first effect of the inhalation of dust of any kind, is an irritation producing cough and, later, pharyngitis and bronchitis. After a time the respiratory tract adapts itself to this continuous irritation, the pharynx and larynx become anesthetic and the cough disappears. The small particles which escape the first protective forces of the lung enter the alveoli, where they are seized by the macrophages, and eventually reach the lymph stream. They are then conveyed to the periphery of the lung (the so-called pleural drift.) Due to the insoluble nature of silica particles, they are not dissolved by the lymph but remain as foreign bodies and set up a chronic inflammatory condition. In the end the striking point is the extensive plugging and obliteration of the small and medium sized lymphatics and the compression of the larger ones. This is brought about by the accumulation of dust in these lymphatics and the resulting extensive formation of fibrous tissue. The dominant feature of the pathology of pneumoconiosis is the fibrosis. In the non-fibrotic portions of the lungs there is more or less emphysema.

#### SYMPTOMS

It should be emphasized that symptoms do not appear until fibrosis has become advanced. After the mucous membranes of the nose and throat become accustomed to the irritation of the dust, no symptoms may appear for years. Even in the earlier stages of fibrosis there may be very few, if any, symptoms.

The rapidity with which advanced fibrosis and its accompanying symptoms appear depends very largely on the amount of silica which the dust contains. Other things being equal, the higher the percentage of silica in the dust, the more rapid and more complete the fibrosis. If there is no silica in the dust, or if it is present in small percentages only, fibrosis takes place very slowly and many years may elapse before definite symptoms arise. In the case of coal dust it takes twenty to thirty years of marked exposure to cause sufficient fibrosis to produce definite symptoms. Potters rarely develop serious symptoms in less than ten to twenty years of constant employment. In pure silica dust, however, where the particles are very small and sharp, and where the dust is concentrated, the average time the occupation can be followed is six and one-half years. Most authorities agree upon an average period of exposure of from ten to fifteen years as being necessary for the production of symptoms. American workers place the average period at fifteen years.

According to Jarvis, the first manifestation is loss of appetite. This is followed by cough, apt to be paroxysmal in character, worse in the morning and often accompanied by morning vomiting. Later, sputum usually appears. At first it is small in amount. The color varies from greyish to red, blue, to inky black, according to the character of the inhaled dust. When marked fibrosis occurs, the sputum is often muco-purulent. It may be blood-streaked or small hemorrhages may occur. An associated bronchiectasis may cause abundant sputum. An associated acute bronchitis will greatly increase the amount of sputum.

Dyspnea is the cardinal symptom. It comes on insidiously. Noticeable at first only on exertion, in advanced cases it is apparent when the patient is at rest. In cases of silicosis it is quite an early symptom, usually appearing before the cough and expectoration. Sometimes the dyspnea is asthmatic in character and aggravated by the dust. As the fibrosis advances, the respirations increase and the pulse and blood pressure decrease. The temperature is apt to be slightly subnormal and rarely is above 99.3 degrees. Pleuritic pain is fairly common, as is also a feeling of constriction in the chest. These symptoms seem to be especially noticeable in silicosis.

In spite of all these symptoms the general health may be very little impaired. There is usually a very noticeable absence of marked constitutional symptoms. So much is this so that, when marked constitutional symptoms

arise, one should always suspect a complicating pulmonary tuberculosis.

#### PHYSICAL SIGNS

They are those of extensive fibrotic areas throughout the lung, and of emphysema in the other portions of the lungs. Physical signs of dilated bronchi and bronchiectasis are also often present.

#### RADIOGRAPHIC SIGNS

The x-ray shadows are quite characteristic. They are those resulting from the deposition of dust and later of fibrous tissue in and around the primary and secondary lobules of Snow Miller. The first stage of silicosis is characterized by an increase in the hilus shadows together with prominence of the trunk and fine branching shadows. During the second state the deposition of dust in the lymph spaces, with the resulting fibrosis, brings about a characteristic diffuse mottling which begins at the hilus and gradually extends throughout the lung, resembling to a slight degree military tuberculosis. This so-called "snow-storm" appearance is peculiar to silica dust, for it does not occur when the dust contains no silica. In the advanced stages there occurs a coalescence of the areas of mottling so that it sometimes becomes indistinguishable from pulmonary tuberculosis. However, silicosis differs from tuberculosis in that it is more apt to be bilateral, more marked in the right lung, and usually starts at the hilus and extends to the base.

The relationship of pneumoconiosis to tuberculosis varies with the different kinds of dust. Very chronic, slowly produced pneumoconiosis, such as is caused by coal dust, renders the lungs less susceptible to the spread of the tubercle bacilli. There seems to be no doubt that advanced silicosis renders the lung tissue more susceptible to the action of the tubercle bacilli. Health surveys have brought out the fact that the incidence of active tuberculosis among granite workers varies directly with the dustiness of the occupation and the length of exposure. Among the group of hand pneumatic tool cutters with the highest dust exposure (forty to sixty millions of particles per cubic foot of air) there is a very rapid increase of prevalence of tuberculosis with increasing years. That there is a high death rate from tuberculosis among workers in silica dust, has been known for many years. The validity of this observation has been attacked on the ground that a high percentage of the deaths certified as tuberculosis were in reality due to simple silicosis—or a primary and immediate cause of death as silicosis with a contributing cause of tuberculo-

sis—while it is probable that many deaths certified as "fibroid phthisis" were really due to simple silicosis. One has only to study the trend of mortality among granite cutters to realize that not only has the death rate from tuberculosis been rising rapidly but that there is a definite relationship between tuberculosis and the use of the pneumatic hammer for granite cutting. The death rate from tuberculosis among Barre granite cutters has risen from 1.5 per thousand in 1890 to 19.6 per thousand in 1924. Since the introduction of the pneumatic tool, about 1900, with its consequent increase in dustiness, the mortality rate rose rapidly and is still on the increase.

#### PREVENTION

We have seen that silicosis is an occupational disease due to inhalation of silica dust. If silicosis is to be prevented, steps must be taken to reduce the amount of dust or to remove the dust from the vicinity of the workman, or both. In Arizona copper mines, silicosis does not constitute a health hazard since very little dust is generated, due to the use of the water jet on the pneumatic drills. In many of the large mines in Arizona, the dust hazard is further reduced by the humidification of the air through the regulation of the fresh air intake. This is done by the use of sprays and sprinklers at the fresh air entries to saturate and humidify the incoming air. This method, combined with good ventilation, which rapidly removes any contaminated air, results in greater comfort and increased efficiency of underground workers. In other mines the long tunnels, as well as the ore about to be removed, are wet down.

All men engaged in work where dust is a hazard should be carefully examined by stethoscope and x-ray before being employed. If they present evidence of past or present tuberculosis, or if they present evidence of heart or lung disease, they should be excluded from work. Periodic health examinations, including x-ray examination, should be carried out. Any person showing a definite degree of fibrosis, should be removed from his dusty occupation, for it is well to emphasize at this point that it is only advanced silicosis that is incapacitating and if workmen are removed from the dust hazard before the development of advanced silicosis, the hazard will be greatly reduced.



## ARTERIOSCLEROSIS

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(Read before the Maricopa County Medical Society, Phoenix, Arizona, April 28, 1930.)

Arteriosclerosis has of late become a favorite topic of conversation among the laity. In popularity, it rivals sinus trouble and even venerable autointoxication. Everybody seems to know all about it. But when we come to discuss it rationally, we find that we know very little about it. Indeed, some doctors even confuse it with hypertension, despite the fact that the two conditions are entirely independent of each other, though, of course, they might exist in the same patient. Even the name, arteriosclerosis, hardening of the arteries, is misleading, since it gives no indication of other very important changes preceding the sclerosis. Thanks to Adamy, Monckenberg and, especially, Aschoff, we are able to get some idea as to what those changes are.

What, then, is arteriosclerosis? Before attempting to answer this difficult question, let us briefly review the structure of the normal artery. It is customary to divide the arterial wall into intima, media and adventitia. The intima, the inner layer of the artery, consists of a layer of flat endothelial cells which lines the entire vascular system, including the heart, a fibroelastic layer and an internal elastic membrane. In the aorta, the intima is thicker, containing in addition an inner elastic layer, an outer muscular layer, the two separated by elastic stia terminalis. The media is made up of flat bundles of involuntary muscle, separated by elastic fibers, and of an external elastic membrane. The proportion of muscle and elastic tissue varies greatly in the different arteries. In the aorta and the other large arteries the elastic fibers predominate. This gives them their great elasticity, enabling them to perform their function as distributing channels and maintaining a steady flow of the blood stream, even during diastole. In the arteries of the internal organs and extremities, the muscular tissue predominates, allowing for greater distention and contraction, in accordance with the demands placed on them by the given organ. The adventitia consists of fibroelastic tissue which blends with the areolar tissue surrounding the artery. The nutritive blood vessels are located in this layer. They supply food to the adventitia and the outer half of the media. The inner half of the media, as well as the intima, is nourished by the blood stream within the artery.

Aschoff recognizes three stages in the

life of an artery: ascending, the summit and the descending. During the ascending stage, all the constituents of the wall of the artery increase equally. During the summit, which begins at the thirty-third year, the artery remains stationary. During the descent, beginning at the forty-fourth year, the elastic tissue decreases and the connective tissue increases constantly. This is one of similar changes taking place during this period in any other part of the body possessing elastic tissue. It is most noticeable in the skin, where the smoothness maintained by the elastic tissue gives way to the wrinkles produced by connective tissue. In the arteries, this change diminishes the elasticity and increases the diameters of the vessels. The increase in the transverse diameter causes dilation of the blood vessel. The increase in length accounts for the tortuosity of the artery. Aschoff describes a simple experiment to show what age does to the elasticity of the aorta: He detaches the aorta from the posterior wall between its two ends, and cuts it in the middle. The cut ends immediately retract several centimeters. In the aged, no retraction takes place. These changes occur in all and are physiologic. They constitute fibrosis of the arteries, but not arteriosclerosis.

Then there are the atheromatous changes which are not physiologic. They occur in all ages, though more frequently in infancy, puberty and old age. They are seen mainly in the aorta and other large vessels where great strain is used by the vessel, as near the origins of the vertebral arteries and the carotids and iliacs. At those points, white patches are seen which vary in size and consistency. In infancy and puberty, the process begins with a deposit of fat in the cement substance of the fibroelastic layer of the intima. This deposit separates the elastic layer and pushes up the endothelial lining of the intima. As a reaction to this invasion, a few wandering cells appear and some proliferation of connective tissue takes place. The process does not ordinarily go any further. In time, the connective tissue and the deposit are absorbed and the intima is restored to health. Not so in the aged. Though here, also, the atheromatosis begins in the intima by a deposit of fat, the process goes on unchecked to more serious changes. In the first place, the character of the intima is different from that in the young. The elasticity is gone, connective tissue is in abundance, the dilated artery offering an easier access to the onrush of the invading fat. The reaction to this invasion is correspondingly more marked, with the result of still

more increase of round cell infiltration and connective tissue proliferation. This process is no longer limited to the inner half of the intima. It spreads both ways and invades even the media. And when the place becomes too crowded, hyaline degeneration and necrosis of the connective tissue cells take place. This further complicates the situation. Precipitins put in an appearance. They are meant to get rid of the mess. Instead, they make matters still worse. They break up the fat, liberating cholesterol. This is acted upon by the fatty acids, producing soap, mainly of calcium, resulting in hardening of the arteries. The proper name for this process is not arteriosclerosis, but atherosclerosis. And the two important elements in its production are atheromatous changes superimposed upon previously changed arteries of old age.

As to the nature of atheromatosis, Virchow attributes it mainly to a mechanical cause. He first establishes the fact that fat found in the patches is not a degeneration but an infiltration. He also noticed that these patches are usually found in spots where the arteries show greater strain. He therefore concluded that the process is caused by the plasma pushing its way into the intima in a little greater volume than is necessary for the vessel's nourishment.

Aschoff's investigations led him to believe that, in addition to strain and the inhibition theory, as he labeled it, there must exist some dyscrasia in the blood which causes some physiochemical changes in the fat metabolism. First, it was noticed that, during the World war, German soldiers began to show continuously less atheromatosis as the war progressed. That would be explained by the fact that their fat rations grew less. Then it was shown that rabbits fed on cholesterol developed atheromatosis, and that, by withdrawing cholesterol, the atheroma disappeared. Similar results were obtained by feeding rabbits on lanolin. When thyroid gland was added, no atheromatosis took place. This explains why atheromatosis is more common in infancy, puberty and senility, as in each of these stages there is an unbalance of fat metabolism.

To sum up:

When arteries are working under strain, and there is a certain unbalance in the fat metabolism, atheromatosis will take place. If this process occurs in senile arteries, the changes become more serious and end in atherosclerosis.

The various affections of senility are due to the impaired function of the arteries. Arteries are built to carry food and oxygen to every cell of the body. When the architec-

ture of the artery is changed by fibrosis, the function as distributing agent is impaired. The cells, not receiving their full ration, will not be able to perform their respective duties properly. As the changes in the arteries continue to obstruct the flow of blood, the cells continue to starve. Less useful work is performed by them and more waste products accumulated in the body. These have a deleterious effect on the already degenerated arteries. A vicious circle is formed.

Symptoms produced by atheromatosis are an intensification of the above. Life becomes a burden, and at last reaches a state where it can no longer continue.

Not all the arteries are necessarily affected at the same time and with equal intensity. This accounts for the difference in the ability of the various organs to carry on. The organ that is supplied by a softer artery will naturally be in a better position to continue its life work.

The etiology is not well understood. Some text books still talk of alcohol, tobacco, coffee and other "vices" as causes of arteriosclerosis. But these are mere guesses, as none of the above-mentioned causes was proven to be able to produce hardening of the arteries. On the contrary, we know of many who indulge in them and retain their arteries, retain their normal elasticity, while others who led an exemplary life have arteries as hard as a rock. Aschoff teaches us that a certain blood dyscrasia is necessary to produce atherosclerosis. But he does not claim to know what factor brings about that dyscrasia. A good guess is that there is no cause; that this is nature's way of getting rid of us. The reason these changes differ so markedly in various individuals might be explained by hereditary disposition. But this also, is only a guess. At times, we might have to hide our ignorance in the presence of some patient for his own good. We then might be permitted to let our imagination work. But, among ourselves, let us be honest and admit that we do not know.

As for treatment, since we do not know what causes the condition, we cannot be expected to know what to do for it, either prophylactic or curative. Here, again, if we deal with a neurotic old maid of either sex, we may have to pretend that we know all about it. Otherwise, aside from symptomatic treatment, we do not know what to do about it.

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## ABNORMAL EYES IN CHILDREN OF GRADE SCHOOL AGE

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The large number of cases showing abnormal eyes, seen at the Clinic of the Social Service Center, suggested a survey among grade school children to determine the number of abnormalities. Conditions considered as abnormalities include not only errors of refraction, but also cases of infectious eye diseases, such as trachoma and acute epidemic conjunctivitis. The actual number of infections must be an approximate one, as it would vary with different surveys taken at different intervals of time. However, in examining the past records it is found that this number is fairly constant throughout any one year, and the variations are most marked in comparing different years.

The method of examining for visual defects in children, in Phoenix, is as follows: At the beginning of the school year the school nurse examines the children for any deviation from normal. Records are kept on all cases examined and children with sufficient defect are advised as to medical attention. A second routine examination is attempted shortly before the end of the school year. In the interval the school nurse spends a certain amount of time each week at each school, depending on its size and the number of schools she has under her care. During these visits she rechecks those defects previously noted, gives treatments and sees any new cases brought to her attention by the teacher.

At the present time every state has some form of legislation governing school nursing and almost all of them include an examination of the eyes as routine. The first organized effort to advance this supervision was "The Association for the Conservation of Vision," which was formed as a Division of the Bureau of Public Health and Instruction under the American Medical Association. This was formed in 1913 and the results of its efforts were immediately gratifying. Previous to 1913, only eight states had laws relative to the examination of grade school children, beginning with Connecticut in 1897. Within the two years following 1913, ten more states were added and since that time every other state has passed some form of this legislation. Several other organizations have helped to promote this legislation, notably The Association for the Prevention of Blindness."

Six Phoenix schools were checked for this survey. They were chosen as representa-

tive of various types of pupils and home environment and included two schools having white pupils, one with mixed white and Mexican and three Mexican. The largest school was Emerson, with 1,100, and the smallest Douglas, with 130.

Emerson is a school admitting only white children and, of its 1100 pupils, 600 were examined this year; slightly more than fifty per cent (54.5.) Of this number examined, 497 had normal vision—considered in this case to be 10/10—leaving 103 with some degree of visual defect. However, this percentage cannot be applied with accuracy to the remaining 500 children not examined, as the initial examination included all the children in the entire school with obvious visual defects, such as blindness in one eye or such a degree of impairment that there was difficulty in doing the usual tasks at school. With this provision we shall consider only the 600 examined.

Of the 103 defects, sixty-four had normal vision in one eye with vision in the other eye not less than 8/10. This group was considered to have adequate vision and were not advised to have corrective measures taken. Sixteen other children had vision equivalent to 8/10 in each eye and this group was also considered to have sufficient vision. It was found, therefore, that thirty-three children had visual deficiency sufficient to advise correction. In this group one child had 10/10 vision in one eye and 6/10 in the other eye; another 10/10 and 2/10; another 6/10 in each eye and the others had less vision down to entire blindness in one eye. Two children had strabismus of extreme degree. Twenty of the thirty-three children have already had corrective measures taken, and this number includes all those with the more marked defects.

Emerson school shows a low number of trachoma cases, six receiving treatment at the present time and two having had their lids rolled. The number of other cases of eye disease fluctuates so much that a compilation at any one time is valueless. The school nurse states that an average number would be less than a dozen.

The other school with only white children was McKinley, where the number is 250. Here 160 were examined or sixty-four per cent—of whom 124 were found normal. Of the remaining twenty-six, only ten had visual defects sufficient for correction, eight of these having minimal defects, one having 2/10 in one eye and 10/10 in the other, and one having one blind eye and 10/10 in the other. Eight of these ten have been corrected, which is a good record.

At McKinley, five cases of trachoma are being treated and four cases have had their lids rolled. In addition, there is at present one acute trachoma barred from school and under treatment. This school is almost free from acute infectious conjunctivitis or other eye disease at this time.

Grant school has the largest enrolment of Mexican children, with 650. Sixty, or about ten per cent were examined in the fall or first examination, and, of this number, nineteen had normal vision or 10/10, and an additional twenty had 8/10, or sufficiently normal vision not to require correction. The twenty-one children with visual defects sufficient to require correction ranged from fifteen with the equivalent of 6/10 vision, to children with maximum vision of 3/10. Only two of this group were corrected. Due to the incomplete report, this school cannot be compared to the preceding schools reported. However, it is seen that the percentage of correction of defects is much lower at this school.

Trachoma is much more prevalent at Grant school than in the preceding two schools reported. There are forty-five cases here, and, in addition, the number of cases of infectious conjunctivitis is usually over fifteen.

At Lincoln school, fifty children, or twenty-five per cent of the 200, were examined. This school has Mexican children. Forty-two of the fifty examined had normal vision, and, of the remaining eight, only one had vision deficient enough to require correction.

There are two cases of trachoma at Lincoln school who have had their lids rolled and one other is under treatment at this time. This school has a good record also in the low number of cases of acute infectious conjunctivitis.

Lowell school has both white and Mexican pupils, with an enrolment of 800. Two hundred ninety, or thirty-six per cent, were examined and twenty children were found to have vision low enough to require correction. These defects vary from five with 6/10 vision in both eyes to three having one blind eye and the other normal. Fifteen, or seventy-five per cent of those with considerable defects have been corrected.

There are at present fifteen cases of trachoma under treatment, with four cases operated. This number is high as compared to the figures for Emerson and McKinley. Lowell also has a higher average number of acute infectious eye diseases.

The treatment of infectious eye diseases falls largely upon the school nurse and the teachers, as a majority of the Mexican

children will receive no home treatment. In this work, many of the teachers are very efficient and are of great help. It is unfortunate that most school nurses have too many children to care for so that daily treatment falls upon the untrained teacher. An example of this hazard was recently seen when a teacher in one of the outlying schools received a severe acute conjunctivitis while attempting to treat one of her pupils with a similar affection.

## DIAGNOSTIC FORUM

### CASE OF CHRONIC PAINLESS JAUNDICE

(Case 15181, Case Records of Massachusetts General Hospital, from New Eng. Jour. of Med., May 2, 1929, p. 939.)

#### CASE HISTORY

An Irish-American, forty-six years old, an inspector in the fire department, entered January 8 complaining of jaundice.

A year before admission he began to have colicky pain in the lower abdomen, worse at night, intermittent and quite severe, relieved somewhat by plasters. He had anorexia and mild nausea. Two weeks later, an hour and a half after going to work, he felt nauseated and vomited some greenish bile stained material. He was in a state of collapse. He went to a hospital, where he was told that a blood test raised a suspicion of syphilis. A second test was negative. His skin was yellow. The following day he went to a specialist. Gastro-intestinal x-rays were made and he was put on a diet of milk and cream with powders for six weeks. During that time his weight fell from 169 to 149 pounds. During the period of treatment he had no symptoms except jaundice and itching of the skin. The following March he had an attack of sharp colicky pain after every meal. He went to another hospital, where operation was done March 28. After it he was told that he would live only six weeks. He was privately informed however that even after the operation they were not sure of the diagnosis. Kahn and Wassermann tests were both positive. A Graham test showed no filling of the gall-bladder. He was discharged April 14 weighing 143 pounds. He was told he might eat anything and should return for x-ray therapy. On April 17 he came to the x-ray clinic, but was advised to wait for two weeks because treatment at that time might stir up complications. He did not return. He continued to work, although not so hard as previously. His appetite was good and he ate everything. His stools were clay colored at times. His urine was very dark. The jaundice persisted. The itching of the skin stopped. Three weeks before admission he had an attack of indigestion, with gas and distention. A physician found fatty stools and told him some of his food was going through undigested. Since that time he had eaten less and had felt relieved. At this time he noticed that his feet were slightly puffy. For two weeks before admission he had had a mild cold with unproductive cough. At admission he had persisting jaundice, slight loss of strength, steady weight, some mental depression and lack of energy. His abdomen was somewhat distended. There was a questionable hernia in the wound. His urine was dark colored. He occasionally urinated once at night.

His past history was negative except for left inguinal hernia repaired twenty-five years before



admission at this hospital, and gonorrhea and soft chancre twenty-three years before admission treated by a syphilologist of this hospital. Until sixteen years before admission he took a moderate amount of alcohol. He smoked a package and a half of cigarettes and two or three cigars a day.

His mother died of shock.

Clinical examination showed a very much wasted man. Skin dry, loose, scaly; moderate icterus. Teeth carious. Apex impulse of the heart not seen or felt. Sounds very faint, distant and of poor quality. Rhythm regular. Pulses and arteries normal. Blood pressure 90/40. Right upper chest dull, with bronchial breathing. Breath sounds loud and exaggerated throughout. No rales heard. The abdomen showed the scars of the previous operations, with a bulge of postoperative hernia in the right rectus scar. A hard irregular mass the size of a grapefruit in the epigastrium. A nodule the size of a marble in the skin above the umbilicus. Below the right costal margin two finger breadths from this mass was a smooth, dull, movable mass the size of an orange extending down to the right lower quadrant. Rectal examination showed hemorrhoids, no masses. There was marked pitting edema of the ankles and feet.

Before operation urine normal; blood not recorded: icteric index 50 to 75; van den Bergh test 16.12 milligrams of bilirubin per 100 cubic centimeters of blood; clotting time 14 to 19 minutes.

Before operation temperature 98° to 101.3°, pulse 80 to 110, respirations normal.

January 14 operation was done. Two days later patient was in poor condition, had difficult and increasing respiration and was running an irregular low grade temperature. Both bases were filled with coarse bubbling rales. He was very deeply jaundiced. He continued in the same condition and on January 18 died.

## DISCUSSIONS

Diagnostic conclusions offered on this case by members of the Phoenix Clinical Club were as follows:

**Dr. A. C. Kingsley:**—Syphilis of liver; tumor of pancreas.

**Dr. Howell Randolph:**—Carcinoma of head of pancreas, probably secondary to carcinoma developing in duodenal ulcer; course too slow for primary carcinoma of pancreas; carcinoma of bile ducts unlikely; ulcer of duodenum with rupture and adhesions a possibility; metastases to liver and lung.

**Dr. J. M. Greer:**—Carcinoma of head of pancreas.

**Dr. Victor Randolph:**—A diagnosis in this case can be only a guess; carcinoma probable, involving hepatic duct by pressure and mesentery and with subcutaneous metastases; primary may be in pancreas, stomach or cecum; infrequency of abdominal metastases from primary liver or bile duct carcinoma rules these primary sites out; syphilis also present.

**Dr. T. T. Clohessy:** Gastric carcinoma with metastasis in liver.

**Dr. Fred Holmes:**—Carcinoma of bile ducts or gall bladder, or head of pancreas; metastatic carcinoma in lung.

**Dr. H. P. Mills:**—Cancer of pylorus with metastasis.

**Dr. F. C. Jordan:**—Cancer of gall bladder or bile ducts.

**Dr. S. I. Bloomhardt:**—Carcinoma of pancreas; secondary of pylorus and possibly of right lung; terminal pneumonia; syphilis.

**Dr. O. H. Brown:**—Important record points; epigastric tumor, mass to right, jaundice, negative

Graham test, downward course, operation, doubtful prognosis, Wassermann positive, indigestion, pruritus, carious teeth, denied x-ray treatments, feeble heart, swollen feet, lung changes, fever.

Diagnosis: Cancer head of pancreas; enlarged gall bladder; myocarditis; syphilis; bronchopneumonia; bilirubinemia; carious teeth; indigestion; pruritus; biliary obstruction.

## DR. W. WARNER WATKINS

The presenting symptom in this patient is jaundice. Jaundice is an exceedingly interesting study, and I wish I had time to go into its biochemistry and the clinical significance of its various aspects. Jaundice is the name given to the appearance of bilirubin in the visible tissues of the body,—skin and mucous membranes, etc., on account of the failure of its elimination through the liver.

It has now been conclusively proven that bilirubin is not formed in the liver, but is simply eliminated by that organ, in a manner comparable to the elimination of urea by the kidneys. The suggestion that bilirubin is not formed by the liver was suggested as long ago as 1847 by Virchow, but the final proof of this has been slow in coming. Bilirubin is derived from hematin,—the iron bearing portion of hemoglobin; bilirubin is chemically identical with hematin which is the blood derivative which stains the skin yellow after a bruise. Bilirubin is formed by the reticulo-endothelial cells, chiefly of the bone marrow and the spleen, and is eliminated through the liver cells. In passing through the glandular cells of the liver, some alteration is effected, so that the bilirubin appearing in the bile ducts differs in some not entirely known fashion from that which circulates in the blood. The difference can be detected by laboratory test (Van den Bergh) allowing us to say whether the bilirubin present in the blood plasma has passed through the liver cells or not.

Jaundice due to obstruction to the normal passage of the bile through the bile ducts occurs because of the reabsorption of the bilirubin into the blood, and this gives the direct Van den Bergh,—which indicates obstruction in bile tract somewhere. Jaundice due to retention in the blood of bilirubin formed by hemolysis of red cells, by red cell destruction, by sepsis, infectious jaundice, Weil's disease, or by anemias,—that is bilirubin which has not yet passed through the liver cells,—gives the indirect Van den Bergh reaction which indicates hemolytic type of jaundice. The diphasic reaction is where both reactions occur, and indicates that both types of jaundice are present.

The three common causes of obstructive jaundice are gallstones, cholecystitis without stones, and cancer in or about the bile tract; less common causes are cirrhosis and syphilis of the liver. The common causes of hemolytic jaundice are acute yellow atrophy, pernicious anemia, sepsis and other infections, and familial jaundice.

Our patient has a past history which indicates that he had syphilis. A year ago he had pain, with anorexia and nausea, followed by jaundice, and then loss of weight. His Wassermann was questionable, and was probably one of those plus-minus aggravations which we get in jaundice. What are the indications from the history? The hemolytic types seem to be ruled out by the symptoms, which point plainly to one of the obstructive types. The Van den Bergh is not mentioned but should have given a direct reaction. We have as possible causes, cholecystitis with stones, cancer in or about the bile tract and syphilis of the liver.

Gastro-intestinal x-ray evidently showed some sort of stomach defect which caused them to put the patient on ulcer regime for six weeks, during

which time he lost 20 lbs. Then they operated upon him and found some lesion which they regarded as cancer, but were not entirely positive. They probably did some sort of palliative surgery on the stomach, as he had some relief but jaundice continued. Wassermann and Kahn tests are positive, so stated. Graham test showed no filling of gall-bladder. As you know, this test aims to fill the gall-bladder with bile impregnated with a dye more or less opaque to x-ray. When the gall-bladder is able to empty and refill during the period of elimination of the dye, we get a shadow of the organ on the x-ray film. If this process of emptying and refilling is interfered with from any cause, we will get what was found in this patient,—negative findings.

Their prognosis was evidently hopeless, because they took off dietary restrictions and suggested x-ray therapy.

At the present examination, it has been nine months since his operation. Jaundice has persisted, weight has remained steady, though there is loss of strength and failing memory,—which jaundice will cause. There is a mass under the umbilicus, which is probably tumor, and another one under costal margin which is probably distended gall-bladder. Is there anything else which comes into the picture than cancer? I cannot think of anything reasonable. The remaining question of interest is the primary origin of the cancer. Cancer in this region, producing jaundice might arise from liver, gall-bladder or ducts, pancreas, stomach or duodenum. Whatever he has caused some filling defect in stomach nine months ago; this with the character of symptoms seems to rule out primary liver cancer. Course of the disease would seem to me to be against primary cancer of the pylorus. The balance of probability is in favor of cancer arising from head of pancreas or from the bile tract, and it is purely speculative which.

The last surgeons evidently would not take the diagnosis of the first ones,—since they were so far off in their prognosis of six weeks life. So they went in to see for themselves; I judge they went in and backed out.

My diagnosis is cancer of the head of pancreas or of the bile tract primarily, with secondary involvement of stomach and liver, possibly lung. Terminal pneumonia.

#### DR. R. J. STROUD CAUSES OF JAUNDICE

1. Obstructive: Cholecystitis, cholangitis, carcinoma of ducts, pancreas, stomach; adhesions of ducts from duodenal ulcer, stone of hepatic or common ducts, massive stone of gall bladder.

2. Non-obstructive: Weil's disease, catarrhal jaundice, secondary to acute infections as typhoid, etc., syphilis, acute yellow atrophy, cirrhosis, acute and chronic hepatitis, carcinoma of liver, antisyphilitic administrations, tuberculosis, hemolytic jaundice.

This classification is really not tenable but gives a working basis for diagnosis.

Most of the non-obstructive forms are painless, but carcinoma of the ducts and large stone of gall-bladder may also be painless.

Exclusion is made, because of subsequent history, of all but syphilis, carcinoma of some organ, cirrhosis, and perhaps cholecystitis with large painless stone.

There is no history which would lead to the diagnosis of cirrhosis except the alcohol, but there has not been described either a gradually growing mass with extension of liver dullness evenly, and the later masses hardly give the picture. There is

no ascites. He has a positive Wassermann and Kahn. Syphilis generally causes jaundice in the primary cases, and gumma in the tertiary stage (I saw a case cleared up under arsenicals, although the skin showed irritability to arsenic); syphilis as a cause is never entirely ruled out. He was treated for a stomach ulcer or duodenal ulcer following x-rays. However, the treatment with alkalies may have been for gall-bladder disease. His later symptoms of pain after meals point more to gall-bladder trouble or irritation or dysfunction for some reason rather than the ulcer.

Cause for operation is not known. It looked as if he was opened up and closed with suggestion of carcinoma, either of the stomach, pancreas, gall-bladder or liver.

He was advised to have x-ray therapy for the condition. I do not know what for. General malignancy of the region is too close to other organs for the roentgenologist to care to give exposure. Maybe they thought they would activate a syphilis. His gall-bladder did not show filling; something was in the way; a growth or obstruction or chronic inflammatory closure of the ducts. At first, the appetite was very good. Later and at the same time he found that by eating less, he felt relieved; a good sign of carcinoma of the stomach, where the stomach generally takes small amounts of food, and soft food. I would like to know if soft foods were better taken.

Constipation was not mentioned. All the signs of dark urine, fatty stools, clay-colored stools, high icteric index, clotting time, and Van den Bergh, mean that the bile is being excreted through the kidneys, and the blood is carrying a big percentage of bile elements, and that the intestines lack bile.

On entering the hospital, he showed signs of a debilitating disease which caused the low blood pressure and signs of a failing heart.

The large grape fruit sized mass in the epigastrium was a new growth; the smaller smooth mass could have been a gall bladder, either with a stone, or malignant, or it could have been some growth of the intestines without giving any bowel signs. More suggestive of carcinoma of the gall bladder.

After operation he did not rally for his physical condition could not sustain the shock. Heart then failed rapidly with wet bases of the lungs. Jaundice increased rapidly (we do not know what was done; maybe an exploratory only). An extensive operation with such a blood pressure was dangerous and perhaps not attempted. Normal urine before operation did not mean that there was no bile. There must have been bile with those blood findings.

He was jaundiced before Wassermanns were done, and yet he was treated for so-called soft chancre when younger. No history relative to antisyphilitic jaundice is given. May have taken mercury at times.

His original operation puzzled the operators. He was first told he would die in six weeks; then that they were not positive in diagnosis. It calls for care when the patient was not even seen.

The early history of carcinoma could have been compatible with the pain in the lower abdomen, then followed painless jaundice, with later a mass,—two masses and a possible extension to the upper right lung which could be metastatic.

Where was the carcinoma? We have stomach history and treatment after x-ray. Pancreas could give the picture but with such a mass one would expect sugar signs, although the head could bear the whole brunt of the burden.

Diagnosis: Carcinoma of gall bladder with later extension to liver, stomach and lungs. 2. Carcinoma of stomach, primary. 3. Syphilis. 4. Cirrhosis.



Discussions of this case by Group 1, Yavapai County Medical Society and Medical Officers of Fort Whipple, at their regular meeting on Feb. 25, 1930, were as follows:

DR. C. R. K. SWETMAN, Prescott, Ariz.

We have a case of a man forty-six years old who begins with gastro-intestinal symptoms, particularly jaundice. I want to call your attention to the fact that jaundice is really the presenting symptom.

To begin with, he had some colicky pains, loss of appetite and mild nausea. He vomited once only, at least we are told of only one time. He went to the hospital and the following day had a gastro-intestinal series done and was put on a Sippy diet. For six weeks he was on this diet, felt fairly well but continued to lose weight,—lost twenty pounds in that six weeks. The fact that he felt well was probably due to the fact that he was on so light a diet.

Within three months or less of his first symptoms he had enough pain and other symptoms that he went to another hospital and was operated. We are not told, of course, what that operation was, but evidently it gave him some relief; it relieved the itching from the jaundice. Again I want to stress that the jaundice, which was severe, was one of the first and most persistent symptoms. I found one interesting point,—that jaundice accompanied by severe itching is due to obstruction of the ducts, not to anything in the liver itself. If this man of forty-six has obstruction of the duct we want to know first what it is. We have, in the little period following operation, some hint as to what it is. He had clay-colored and fatty stools, which point to the pancreas. We are told that his urine was normal but, at the same time, another man observing says the urine is very dark colored. We take that to mean it was normal as far as showing any inflammatory condition of the kidneys is concerned, but we do not know whether or not it contained bile. With icterus and so much bilirubin in the blood, we think that dark color means bile in the urine, which is good evidence of obstructive jaundice.

There is another interesting point; after the first operation he was told he would not live more than six weeks. Another man told him that even after the operation they were not sure of the diagnosis. We find that that is rather typical of conditions in the head of the pancreas, as even after opening the abdomen it is very difficult to tell whether the enlargement in the head of the pancreas is inflammatory or malignant.

Another thing that is interesting to us is the early jaundice. If it is a condition in the head of the pancreas, how account for it? In two ways. If it is malignancy it would be very soon likely to cause some secondary or metastatic condition around the gall ducts themselves, but the common bile duct lies in a groove in the head of the pancreas and, in about two-thirds of cases, is entirely surrounded by pancreatic tissues for variable distances. The sounds in the heart, we are told, were weak and distant, the pulse regular but also weak, and blood pressure only 90/40. We believe that this indicates a failing heart muscle, simple weakness. We are not told that there is any murmur or abnormal sound, in fact the sounds were so weak they would probably not be picked up if there. He had pitting edema of the ankles. Pitting edema means fluid, of course, in the tissues, and that was probably due to pressure from this malignant growth which we believe he had.

He was operated and the operation did not do him any good. We are not sure what that operation was

but it may have been only exploratory or it may have been drainage of the gall bladder. However, he continued to fail very rapidly and lived only four days after the operation was performed.

In the history we are told that a positive Wassermann and Kahn was discovered at another hospital. However, it strikes us as very significant that when he came to the Massachusetts General they did not think enough of this to do another Wassermann on him. They just let it go.

In yellow conditions of the skin we always, of course, think of pernicious anemia, but there is nothing in this case to even suggest that.

DR. J. T. MALONE, Whipple, Ariz.

Continuing our differential diagnosis, we are confronted with several possibilities. A man of forty-six with sudden gastric symptoms would most certainly lead us to consider malignancy, but the history tells us definitely that this man vomited only once. The pain is not the picture of pain in gastric malignancy; the symptoms were too variable.

Our first impression, when he was suddenly taken with this pain, was that it was an acute condition of some kind. Acute pancreatitis, most authorities tell us, is something that can not be diagnosed unless operation for acute abdomen is performed.

We have a man who gives us a picture of shock. He is suddenly seized, is nauseated and vomited. We think that the interne was rather misled in taking the history and that it was general weakness and not surgical shock, because we find him going the next day to a gastric specialist and having x-rays taken. They were certainly suspicious of some involvement around the pylorus, some suggestion of peptic ulcer, and on that basis he was put on a Sippy diet. He lost twenty pounds. If this condition was non-malignant, the peptic ulcer would have improved, symptoms become less and he would not have lost so much weight.

It is generally known that jaundice, especially of the catarrhal type, is always accompanied by sudden loss of weight, from twenty to thirty pounds.

A little later we have a recurrence of these symptoms; from January to March. At this time the surgeons probably thought an exploratory operation was indicated. We can not definitely predict what was found at that operation, but on the basis of one sentence in the history, one of three things was done; gall bladder was drained, which would account for lessening of the itching; cholecystenterostomy; or gastro-enterostomy, presuming that there was ulcer at that time. We are inclined to believe that the gall bladder was drained into the gut.

As we go along a little farther and consider conditions outside the gastro-intestinal tract, we think of hypernephroma. We are told the diagnosis of hypernephroma is based mostly on urinary findings. The urine was normal. We interpret that to mean normal for everything except bile. However, there is no blood or pus that would indicate hypernephroma.

We have considered syphilis as we are told definitely that this man has blood syphilis, or at least a positive Wassermann. I think it was Dr. Osler who said, "Know thou syphilis in all of its manifestations and all other things clinical shall be manifested unto you." We have taken Dr. Osler's axiom and have tried to make a case for syphilis. There is nothing in the picture that would indicate any form of hepatic syphilis. If we would consider hepatitis that would arise from an alcoholic source (the history tells us that he consumed only a moderate amount), we are in agreement that alcohol is no stranger to a man forty-six years old.

We do not know much about the liver. They do not tell us that they can feel it, that it is hard or nodular. They tell us only that they feel a mass in the region of the gall bladder. That fits very much better the picture of malignancy of an obstructive type.

Going back to syphilis, a recent investigation at the Mayo Clinic of a number of cases reveals that they were not able to differentiate the various types of syphilis of the liver from the pathological changes found in other forms of nonluetic liver involvements, such as the toxic, chemical, climatic, etc.

Except for the data given on the gall bladder, the liver seems to be left out of the picture. With a positive Wassermann, (as the Mayos have shown) there is a very magic response of the luetic hepatic conditions to mercury and iodides. We rather imagine if there was any suspicion of syphilis he would have been given anti-luetic treatment with a disappearance of symptoms. Instead, it is growing worse.

We must consider what would cause persistent painless jaundice. Gall stones could cause it but this condition is rare. We believe he would have had more of a colicky type of pain for a longer period, also that their attention would have been drawn to the possibility of occlusion by stone. From the history, we can not interpret anything in the past that would give him such a jaundice as he has without any other symptoms in the way of colic.

If we consider the various cirrhotic conditions, we are unable to differentiate them, as I have said before. To say positively that this is not visceral syphilis would be more or less speculative. But this type would have improved under treatment, and we believe that they would have given treatment.

This mass in the right side might be in the left lobe of the liver, but the history says it is a movable mass about the size of an orange. In so many words, they say it feels like a gall bladder and believe it WAS a markedly dilated gall bladder. A condition in the kidney, described as hypernephrosis, could produce pressure and a water-logged kidney and could simulate this distention. There is no evidence of urinary disturbances and we believe that this mass would have been sufficiently large to call the patient's attention to it. We have no such evidence from the history.

In considering other conditions of the liver we have thought of hydatid cysts. But he has no tropical history of any kind. These tumors are usually large and again there is something impressive about them to the patient.

One sentence in the history, "A physician found fatty stools and told him his food was going through undigested." To us that means more than merely "his food was going through undigested." In pancreatic disease, an authority recently stated that a fatty stool is to be considered very seriously in the laboratory diagnosis of pancreatitis. What condition in the pancreas would give us that picture of the gall bladder so dilated, associated with a definite mass in the epigastrium? We believe it was a malignant mass. Just what area it covered and just what metastases took place, we can not state, but we believe it was of sufficient size to involve the head of the pancreas, that it occluded the common duct and probably extended to the stomach; also perhaps it involved the retro-peritoneal structures.

To strengthen our impression of pancreatic malignancy a little further, we have looked up statistics and find that the French school of medicine has evolved a law known as "Courvoisier's Law," which states, in part, that when the common bile-

duct is obstructed by a stone, dilatation of the gall bladder is rare; when the duct is obstructed in some other way, especially by malignancy of the head of the pancreas, dilatation of the gall bladder is common. We rather believe that anything in medicine so dogmatic as to be incorporated into a law certainly merits attention.

This picture is rather vague as to the lung picture. The findings are rather misleading as to the terms employed or the interpretation of their findings is not exactly clear to us. They say "right upper chest dull, breath sounds loud and exaggerated throughout, no moisture." We are not able to interpret those findings otherwise than an indication of an existing fibrosis which would fit our own picture of fibrosis. He may have an old quiescent, latent tuberculosis which has given him no trouble and autopsy may show enough fibrosis to account for these findings. The possibility of pulmonary metastases has been considered, but we do not believe that they would have submitted this patient to an operation if they had thought that there was any possibility of malignancy in the lungs. The chest picture is rather confused.

Going back again to our speculation as to what operation was done,—if you remember the history, they were a little bit confused as to the diagnosis. He was told that he would live six weeks; and again he was 'privately informed' that they were not sure of the diagnosis even after the operation, and to go ahead and eat what he wanted. Yet they thought x-ray therapy advisable. He did eat what he wanted and got along fairly well for a time, and then all his symptoms returned.

Further speculating as to the second operation,—we rather believe that it was merely exploratory. Probably this malignant mass at the head of the pancreas was seen and noted so definitely that the man was simply closed up and nothing further in the way of surgery was considered advisable.

We believe that, while there were no urinary findings, this pitting edema of the extremities is associated with fluid in the abdomen. Ascites may not have been apparent. There is a discrepancy in the history. It was stated early that the abdomen was distended but nothing is mentioned of this distention in clinical examination data. We believe that the ascites could have been accounted for by pressure on the vena cava.

#### DR. JOHN W. FLINN, Prescott, Ariz.

In attempting very brief resume of this case, there are three or four outstanding facts that present themselves. The first is a man past forty years of age suddenly develops gastro-intestinal symptoms for the first time. This is always, we are told, strongly suggestive of gastro-intestinal cancer. Within the past week one of our group members has seen a case of very probable gastro-intestinal carcinoma in a woman fifty-eight years of age, who could mention practically the very hour of the very day in which she had her first gastro-intestinal symptoms, about four months ago. Another member of the group had a similar experience several years ago.

The second outstanding fact,—An afebrile persistent jaundice. The causes are three, first, gall stones and their effects; second, cancer of the pancreas or bile ducts, and third, cirrhosis. As was pointed out by the last speaker, Courvoisier's Law probably rules out gall stones in this case because we have jaundice and what we take to be an enlarged gall bladder, which, according to this law, are not both at the same time associated with gall stones.

Cirrhosis is a possibility and, as has been pointed



out, it brings to mind the fact that there are serological findings of syphilis in this case. On the other hand, there are no definite findings of cirrhosis of the liver.

Practically all the classical symptoms of carcinoma of the pancreas are present in this case,—cachexia, pain, tumor in the epigastrium, probably enlarged gall bladder, fatty stools, gastro-intestinal disturbances, and edema of the legs and feet. The question is whether the cancer in the pancreas is primary or secondary. After considering the matter at great length we have come to the conclusion that it is quite impossible to tell. It is possible that the malignancy began in the pylorus and metastasized to the pancreas, but the fact that jaundice came on very early and the fact that there was very little vomiting point to primary carcinoma in the pancreas.

Our diagnoses are:

Carcinoma of the head of the pancreas,

Metastases in the liver and retro-peritoneal glands,

Hydrops of the gall bladder,

Edema of the lungs,

Probably a small ascites.

Discussions in the conference at the Massachusetts General Hospital were, in part, as follows:

#### RICHARD M. CABOT, M.D.

I am supposing that his jaundice ended after the six-weeks period.

I think if I were as uncertain as to diagnosis as they seem to have been in that first hospital I should say nothing about the prognosis. There is nothing that patients remember so vividly as having been told they are going to die in a few weeks and then getting better.

X-ray therapy ordinarily means malignant disease, of which we are not informed. I do not know how long he has had jaundice.

Dr. Tracy B. Mallory: He had it the whole time.

Dr. Cabot: Practically a year. That is very important. Chronic painless jaundice then is what we know, and it is all we know, up to the physical examination. Of course a year's jaundice is a pretty rare thing. We do not expect jaundice lasting a year from any of the common causes except malignant disease, and we do not expect it to last so long if it is malignant disease. So it is a particularly intriguing type of jaundice.

#### DIFFERENTIAL DIAGNOSIS

He died of a malignant disease, I should say, without any possible doubt. The only question is, where is it? We have not had an x-ray of his stomach. He has a good many stomach symptoms. It might perfectly well have been there, although it must, of course, have been outside as well in order to produce jaundice. It might have been in the head of the pancreas. Those are the two common places, although it might have been in the gall bladder or bile ducts. I suspect if there are two tumors one was the distended gall bladder. We have nothing to prove cancer in the liver, although it may well be there. These signs in the lung suggest that there may be metastatic malignant disease there, although if it was as extensive as this it seems as if there would be other evidence of malignant disease.

#### FIRST OPERATION, MARCH 28, NINE MONTHS BEFORE SECOND ADMISSION

High right rectus muscle splitting incision. Exploration showed a very large and dilated gall bladder and dilated ducts fully an inch and a half

in diameter, with a very hard head of the pancreas and enlarged lymph nodes in this area. There was no stone. It was decided that cholecystenterostomy would be of no benefit. The wound was closed without drainage.

#### PRE-OPERATIVE DIAGNOSIS JANUARY 14

Carcinoma of the pancreas.

#### SECOND OPERATION

Under local novocain a right rectus incision was made. A very large gall bladder presented, about seven inches long and four inches in diameter. This was seen to contain clear fluid. There was a hard mass in the region of the head of the pancreas with glands extending upward in the region of the common duct. The body of the pancreas felt cystic, as if the duct were dilated. The pyloric end of the stomach was negative. On aspiration the fluid was found to be slightly bile-tinged. On this account it was thought that the cystic duct was plugged and that the condition of the gall bladder was hydrops. A cholecystgastrostomy was therefore not done. The perforation in the gall bladder was closed with two purse string sutures. The wound was closed without drainage.

#### CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Carcinoma of the pancreas.

#### DR. CABOT'S DIAGNOSIS

Cancer of the pancreas with metastases in the lung and the mesenteric glands.

Distended gall bladder.

#### ANATOMIC DIAGNOSIS

##### 1. Primary disease.

Carcinoma of the pancreas with liver and retro-peritoneal metastases.

##### 2. Secondary or terminal lesions.

Acute caseous pneumonia.

Generalized miliary tuberculosis.

#### DR. TRACY B. MALLORY

I think the most interesting feature of this case is that a man showing as extensive pathology as we found could have been in such relatively good physical condition that the medical and surgical men who saw him felt that it was worth while to attempt a cholecystenterostomy to relieve his jaundice. That of course was the only possible operation that would have been of benefit to him. Up to the time of entry to the hospital he did not seem in any immediate danger of death. He had, however, a large carcinoma of the pancreas with immense metastases to the liver, the latter weighing 3000 grams, approximately double normal. He had also one entire lobe of his lung, the right upper, completely solid with acute caseous pneumonia, with a generalized miliary tuberculosis.

The reason that a cholecystenterostomy was not done was because the fluid in the gall bladder was colorless, and they presumed from that that the cystic duct was closed off and they would not be able to drain the liver through the gall bladder.

## CASE OF ONE YEAR'S COUGH AND WEAKNESS

(Case No. 15011, Case Records of Massachusetts General Hospital, from N. E. Jour. of Med., Jan. 3, 1929, p. 31.)

### CASE HISTORY

An American dairyman fifty-one years old entered August 6 complaining of weakness and fatigue of nine months' duration.

He was well until January, a year and nine months before admission. Then his house and farm buildings burned, ruining his business. Up to the next autumn he did not feel so well as usual, though he had weakness of the legs and malaise. He called a physician, who noticed that he was short of breath. He stopped all work. In January he had a severe nosebleed and two days later a second and a third milder ones. He had been subject to nosebleeds all his life, but not oftener than once a month and never very severe. His physician cauterized the nasal mucosa. Since that time there had been no more bleeding. His weakness, fatigue and dyspnea increased. For three weeks his appetite had been very poor. For two weeks he had been in bed and had had a few night sweats. He had lost thirty or forty pounds in the past year. He had possibly had some fever, but was not sure. For a year he had had very mild cough, not productive.

His mother died of cerebral hemorrhage and possibly had nephritis. His father had many nosebleeds. There is no family history of hemophilia. In ten years of marriage his wife had not been pregnant. She had one son by a previous marriage.

His habits were good.

At four years old he was in bed eighteen weeks with "rheumatism" in the left hip, leaving the hip stiff. Fifteen years before admission he had a rib broken. For fifteen years he had had painful hemorrhoids. Some years ago these bled. Some years before admission he had many sick headaches, at first one or two a month, later as often as once a week, keeping him in bed one or two days. The aching was always over the left eye. They were not relieved by glasses, but stopped when he stopped drinking coffee three years before admission. He had some loss of hearing. Recently he had had a few head colds. He had some abscessed teeth. A few years before admission his wife thought he was slightly dyspneic on exertion. He thought not. His memory was not so good as formerly.

The patient sometimes was very slow in replying, almost lethargic. Three times during the history-taking he went to sleep. The history of the present illness was not considered complete.

Clinical examination showed a pale, slightly dyspneic, undernourished man. Over the trunk and upper arms were scattered round brownish macules 5 to 10 millimeters in diameter with fairly definite borders and thin atrophic or scaling centers. Marked caries and pyorrhea. Perforated nasal septum. Very slight excursion of the diaphragm on deep inspiration, probably not over one centimeter. Respiration very shallow. No definite change in percussion note made out. Fine and coarse rales at both bases, front and back, higher on the right. Location of the apex impulse of the heart not recorded. No enlargement to percussion. Action regular. Sounds of fair quality. A systolic murmur at the base and at the pulmonary and aortic areas. No diastolic heard. Arteries normal. Blood pressure 98/46. Spleen felt below the costal border on inspiration. Generalized moderate atrophy of the left leg, which was shorter than the right. Left hip joint apparently ankylosed. Questionable slight motility in flexion. Protruding internal hemorrhoids, not painful. In the posterior

anal margin was a fistulous opening in the skin about two millimeters in diameter. Pupils normal. Right knee-jerk very sluggish on reinforcement. Left knee-jerk active. Ankle-jerks not obtained. Cremasterics and abdominal reflexes normal.

Urine 28 to 70 ounces, specific gravity 1.010 to 1.016, a very slight trace of albumin at the last of four examinations, an occasional leukocyte once. Blood: 8,750 to 15,700 leukocytes, 79 to 83 per cent polymorphonuclears, hemoglobin 60 to 55 per cent, reds 3,240,000 to 4,350,000, smear normal. Hinton negative.

Sputum not remarkable on five examinations; no blood or unusual organisms. Sputum culture showed a yeast-like organism in almost pure culture. Stools negative. Fasting contents of stomach: 40 cubic centimeters of cloudy colorless fluid, free acid 5, combined acid 16. Test meal: 30 cubic centimeters of similar fluid, free acid 29, combined acid 23. Both specimens gave negative guaiac and on microscopic examination showed 10 to 12 polymorphonuclears per high power field.

X-ray examination August 8 showed the diaphragm low. The respiratory movements were limited on the right, fairly good on the left. The costophrenic sinus was obliterated on the right. There was increased density throughout the greater part of both lung fields. The shadows were coarse and mottled. There were many dense white lines running through them. In the midpart of the right lung field there was a bright area surrounded by rather sharply defined margins of increased density, somewhat suggestive of cavity formation. No fluid level was present. There were no mediastinal masses. "I do not believe that this is tuberculosis." The heart was not remarkable. There was marked deformity of the head and neck of the left femur. The joint space was not obliterated. There was no marked deformity or erosion of the joint surface. The sinuses were negative. There were numerous carious teeth and apical abscesses and marked alveolar retraction. August 17 a second examination of the chest showed no appreciable change since the first observation.

Temperature 98.2° to 104.5°, with evening rise. Pulse 71 to 125. Respirations 20 to 37.

The patient showed striking dyspnea and weakness. Dullness seemed to extend to the right of the sternum without obvious cardiac enlargement. August 8 the rales were considered fine crepitant. There was questionable dullness at both bases. A skin consultant made a diagnosis of possible tinea versicolor. An orthopedic consultant reported, "The hip is the result of an old slipped epiphysis. No tuberculosis." A surgical consultant reported, "Posterior fistula in ano, very punched out opening; suggests tuberculosis."

The patient grew gradually weaker. He had no more hemoptysis (sic). The visiting physician thought the lung process became more extensive. August 25 the patient very suddenly died.

### DISCUSSIONS.

The following discussions of this case were given by Group 3, of the Yavapai County Medical Society and Medical Officers of Fort Whipple, at their joint meeting of Feb. 25, 1930:

DR. G. O. BASSETT, Whipple, Ariz.

This case is filled with rather peculiar facts. One of the most peculiar is that he did not lose his appetite sooner. He did not lose it until three weeks before admission. Had my house and barns burned down, my appetite would have disappeared immediately.



His illness dates back about eighteen months. He gives a picture of a chronic lingering illness. He lost thirty to forty pounds in a year. He is cachectic, he is weak, he has a very definite lowering of blood pressure, systolic being less than 100. The first assumption would be that we have a case of tuberculosis. He gives a history of nosebleed, which was checked by treatment, and which apparently had nothing to do with the picture. It may very easily be a case of pulmonary tuberculosis. He is certainly ailing for a period of eighteen months; he has a cough, but very slight expectoration. Occasionally we see tuberculosis with that feature,—persistent cough and very little or no expectoration. He is increasingly dyspneic, probably in proportion to the spread of disease in the lungs. Whether there are complications, we do not know.

Unfortunately, five sputum tests are made and nothing is found; not only do they not find tubercle bacilli, but nothing else is found. Also an x-ray is taken and reported not tuberculosis. That x-ray report of the lung is very interesting. There is coarse, diffuse mottling, gross, heavy fibrous bands from the periphery to the hilus, probable cavity formation in the right side. If this were tuberculosis, with that amount of involvement and the cough present, we would expect to find something in the sputum. The people who examined the x-ray and the laboratory people who examined the sputum both agree that this case is not tuberculosis, so we are compelled to rule it out.

Among other chronic illnesses we have to consider malignancy of the lung. Shultz, I believe it was, said that malignancy of the lung is not rare, and to confirm his statement gave a review of one hundred thousand autopsies, of which one hundred and fifty-six were found to have pulmonary malignancy. Primary malignancies of the lung are rather rare, metastatic tumors being about ten to one. Both give pretty much the same picture. There is massive infiltration on one side or the other, or possibly both. The general picture this man presents could very easily fit into that of an individual suffering with malignant disease of the lung. The x-ray is not negative. Carcinoma sometimes develops cavities. Unfortunately, there is no record of malignancy of the lung, where it causes death, which does not show blood in the sputum, hemorrhages and usually very foul sputum. He coughs but does not expectorate. He has no record of any bleeding, although it states in the last paragraph of the history, after ignoring the fact that he had no sputum, it states he had no further hemorrhages.

What kind of malignancy could this be without those symptoms? There is wide-spread mottling. There is a type of malignancy of the lung which takes on more of an infiltrative character, spreads to the hilus and all parts of the lungs, and gives a scattered, generalized mottling. So it is impossible to rule out malignancy of the lung, somewhat out of the ordinary, and metastasized from a primary growth of which we can find no evidence. There is nothing in the abdomen; no record of anything about the prostate.

There is a type of malignancy of the lung which have to consider. This is the blastomycotic infections, which our case would fit. However, as in tuberculosis and malignancy, we find there are conditions which do not quite meet the problem. These conditions resemble tuberculosis so closely, as far as x-ray is concerned, that it is impossible to differentiate the type of involvement. Thickened pleura is typical. The clinical findings and objective symptoms are very much the same.—cough, pleurisy and pains. However, with the profuse sputum that these cases usually have, it is not difficult to make

the diagnosis, the blastomyces being present in the sputum. They examined this man's sputum and tell us not only that it is not tuberculous but that no other organisms were found. These fungus infections are characterized by a definite ulceration at some point or other, where the infection enters and spreads to the lung or other parts of the body, neck, head, face, etc.—almost invariably multiple areas of ulceration are found.

One other disease we mention simply to rule out,—syphilis. We take the laboratory findings for what they are worth,—there is a negative Hinton.

That brings us to one statement in the history. They say that five sputum tests are not only negative for tuberculosis but for everything else. Then they mention a pure culture of a yeast-like organism, so that after all the sputum is not negative.

DR. B. C. JONES, Whipple, Ariz.

This case presents symptoms of cancer, of mycotic infection and of tuberculosis. One method of determining whether it is tuberculosis or mycotic infection is by laboratory assistance. In a case which runs along like tuberculosis and the organism of tuberculosis is not found, it should be determined whether or not it is due to one of the mycotic organisms. It is believed at the present time that it occurs many more times than we think.

In this case five sputum tests were negative for tuberculosis and then a yeast organism was found. To find a yeast organism in the sputum does not necessarily mean that the disease of the lungs is of that infection, but it is up to the investigator to determine what type of organism it is, whether it is a pathological form, whether it is saprophytic, or whether it is the definite cause of the disease present.

C. stellani gives under bronchomycoses the following yeast-like organisms: Broncho-moniliasis, blastomycosis, cryptococcosis, saccharomycetosis, bronchodendromycosis.

I think it is impossible for us to determine what organism is present. We can only go so far as to say it is one of the mycoses. The small amount of sputum and the duration of the disease, a year and a half, points to mycotic infection and also to malignancy of the lung. In a report of a large series of primary cancers of the lungs, the duration ranged from two years to a few months from the time of discovery.

In mycotic infection of the lung there is usually cough, scant expectoration, loss of weight and blood in the sputum. The same is true of cancer of the lung,—dyspnea, cough, loss of weight, hemoptysis may occur, fever not marked, and the duration about the same. I shall not go into the different types of mycotic infections because it is practically up to the laboratory to determine the organism present.

In this case the history mentions something about the heart and something about rheumatism in the early part of his life, and then about the patient going to sleep several times during examination, which it is thought may possibly be a heart infection, embolism, or some brain lesion. We have not put great stress on this heart. If this man has chronic disease of the heart, we certainly do not expect it from the report of examination. We do not put much stress on the murmurs which they state are present, and think that low blood pressure is due simply to low vitality.

To make a statement about the terminal condition would be just speculation. A man of fifty-one years dies suddenly. Many things could happen, possibly terminal pneumonia. The progress of the infection is in the lungs.

Our diagnosis is mycotic infection of the lungs.

The following discussions of the case were

given at the Monday noon meeting of the Phoenix Clinical Club on June 20, 1930:

DR. J. M. GREER

The history states that this man was fifty-one years of age, a dairyman and well, in so far as he knew, up to a year and nine months ago. Given this history we immediately think of some more or less chronic disease and one consistent with an active outdoor life rather than one associated with a sedentary life. That his farm buildings burned may be of some importance in the history, in that the disease from which he is suffering may be of much longer standing and the fire precipitated the symptoms or brought them more forcibly to his attention.

The shortness suggests to us, pulmonary disease, disturbance of the cardio-vascular system or disease of the cardio-vascular-renal system. The history of nose bleed suggests that we must be on the lookout for arteriosclerosis or some local condition of the nasal mucous membrane. However we must not forget that many people have nose bleed without appreciable disease of the vascular system. In this case the nose bleed was probably due to a hypertrophied nasal mucosa or varicosed and tortuous nose vessels, as it promptly discontinued upon cauterization.

The weakness, fatigue, dyspnea with some night sweats, as well as the loss of weight and cough, bring our attention back to the chest.

The family and marital history do not mean much to me.

The eighteen weeks in bed at the age of four with "rheumatism" followed by a stiff hip means tuberculosis, unless it can be absolutely ruled out by x-ray or other means. The hemorrhoids may mean a passive congestion from some general condition. This passive congestion is probably the cause of the enlarged spleen. The sick headaches may mean a gall bladder or liver disturbance, but as these cleared up upon discontinuance of coffee they were probably an intolerance to the caffeine or some other constituent of the coffee.

The reported lethargic condition of the patient could be accounted for by a toxemia. However, the history does not point toward any great degree of toxemia.

Upon physical examination the pallor, dyspnea and undernourishment suggests some chronic pulmonary affection.

The skin findings indicate some independent skin disease and we note farther on it was diagnosed as "tinea versicolor." No doubt if Dr. Clohessy could see this he could immediately prove or disprove this diagnosis. The point I am trying to make is that some dermatologist would have to see the lesion in order to make a diagnosis. I do not believe that it had anything to do with the patient's general condition.

The perforated septum suggests lues, but it is the only thing that does. And we know that other things may account for a perforated septum, as in this case the repeated nose bleeds and the, no doubt, repeated trauma, as well as the cauterization as noted in the history. These factors may have been responsible for the perforated septum.

The physical findings of the chest point toward some lung affection. The systolic murmur heard over the base of the heart could mean an old valvular lesion or probably might have been one of the so-called functional murmurs. The low blood pressure is probably due to the generally weakened condition of the patient. Possibly there was some myocardial degeneration present.

It is noted that the sputum is not remarkable. I do not know just what is meant by this. I do not know just what a remarkable sputum would be either. The finding of the yeast-like organisms on cul-

ture of the sputum is very important and to my mind gives us the major diagnosis. The x-ray findings of the hip practically rule out a tuberculous arthritis.

Diagnosis:—

Fungus infection of the lungs.

Myocarditis and endocarditis.

The sudden cause of death was probably due to acute dilatation or embolism.

DR HOWELL RANDOLPH

Gradually increasing weakness for a year and nine months, loss of 40 pounds in weight during the past year, mild cough, dyspnea, center attention upon the chest, and of course the most common disease of the chest causing this group of symptoms is tuberculosis. Many other points in the record tend to substantiate such a diagnosis. However, there are certain findings which bring in the question of some other etiological agent.

This patient's occupation was that of a dairyman. Working about animals and in the open,—like farmers and bakers, etc,—is somewhat more apt to subject a person to fungus infections especially actinomycosis. There were yeast forms found in the sputum in almost pure culture, tho not observed in five different sputum smears. Yeast forms are not infrequently found in the mouth, and for this reason, it is necessary to brush teeth and rinse mouth thoroughly before collecting the specimen. This man had marked oral sepsis. However, the finding of almost pure culture in this case is very significant. Howe and Schmidt in reporting ten cases of yeast infection, state that "the finding of two or three colonies on a plate be considered of pathological significance," whereas they pay little attention to finding of single colonies.

X-ray findings seem rather indefinite. Coarse mottling in the x-ray film is consistent with fungus infection, miliary carcinosis or tuberculosis, pneumoconiosis. The man's occupation had not exposed him to dust to any extent or it would have been mentioned.

Of the fungus infections, actinomycosis is not suggested by x-ray description. As a rule this fungus causes dense foci in the hilus region with streaks or radiation from the central density. Streptothrix is very closely allied to actinomycosis.

Blastomycosis is one of the more common fungus invaders of the lung. However, the x-ray findings are apt to be more suggestive and the course of the disease somewhat more rapid. In favor of carcinoma with metastasis is the age and the finding of gastric contents of slightly lowered acidity and leucocytes. But continued high fever practically rules malignancy out. Miliary tuberculosis can very well explain the clinical picture. The hip joint disease may well have been tuberculosis in spite of the opinion offered. It is quite likely that the miliary spread may have taken place two or three months before admission repeated before death. The negative sputum tests and the x-ray report are against miliary tuberculosis together with the absence of symptoms referring to gastro-intestinal tract.

Perforation of septum was probably traumatic. Systolic murmur is most likely due to anemia which is rather severe in this case. The difference in reflexes is secondary to changes in the hip.

The fistula in ano seems to me to be a very important differential point in this record and when taken with the other findings limits the diagnosis to tuberculosis and fungus infection.

Diagnosis. Fungus infection of lungs.

Comment. Aereo Leao has studied the reactions to filtrates from cultures of actinomycosis and has developed a preparation which reacts positively in clinical cases of the disease and negatively in normal individuals. He also found agglutination test positive in 1:160 dilution. The precipitin test was



negative. The complement fixation test was positive.

Diagnostic conclusions on this case were offered as follows:—

Dr. H. P. Mills:—Tuberculosis.

Dr. Fred Holmes:—Pulmonary tuberculosis; old tuberculosis of hip; rectal fistula; perhaps fungus infection secondary.

Dr. T. T. Clohessy:—Pulmonary blastomycosis.

Dr. F. C. Jordan:—Tuberculosis.

Dr. Victor Randolph:—Pulmonary tuberculosis; old tuberculous hip; secondary fungus infection of lungs.

Dr. F. J. Milloy:—Tuberculosis.

Dr. O. H. Brown:—Blastomycosis; syphilis (?); myocarditis; endocarditis; tinea versicolor; secondary anemia.

Dr. R. J. Stroud:—(1) Some fungus disease of lungs; (2) tuberculosis of lung.

Dr. W. W. Watkins: History suggests lung disease, heart disease or primary anemia; clinical examination suggests heart disease, lung disease, primary anemia or syphilis; laboratory examinations rule out anemia and heart disease; establishes lung disease, miliary tuberculosis, fungus lung disease or malignancy. I favor fungus disease of lungs as diagnosis.

The following are the discussions before the Clinical Conference at the Massachusetts General Hospital:—

#### DR. RICHARD C. CABOT,

It seems as if the family history was important here. We have something suggesting arterial disease in the patient, also in both of his parents.

I suppose he had tuberculosis of the hip.

We used to say that perforated nasal septum means syphilis. Now they say it may mean syphilis but may mean any other pyogenic infection of the same locality.

"Ankle-jerks not obtained," in connection with his perforated septum, makes us wonder as to tabes.

What have we so far? We have a secondary anemia apparently, certainly an anemia. We have an old hip disease which certainly has nothing to do with his present trouble, a rather low blood pressure, a perforated nasal septum, some queer reflexes, and a skin trouble that I do not believe has anything to do with his death. All of that put together is not enough to account for his having died.

I think even the uninitiated like ourselves would say that there is a good deal wrong with those lungs as shown in the x-ray plates. There is a tremendous amount of shadow well scattered throughout both lungs. It could not possibly be normal. It must be pathological.

Let us speculate a little on the grounds of the radiologist's opinion that it is not tuberculosis. In the first place, there is less trouble at the top than at the base. That is almost enough to exclude tuberculosis. We shall come back later to what we have.

Tinea versicolor of course has no connection with this case.

In the final paragraph is the first mention we have had of hemoptysis.

#### DIFFERENTIAL DIAGNOSIS

I do not believe I know what he has. Let us go through the things that we know in the lungs. Of course tuberculosis is the first thought. Five examinations of the sputum showed no tubercle bacilli. Chronic bronchopneumonia, non-tuberculous, is a real thing, from time to time brought up in reports. I do not know how anybody is going to say this is

not a chronic non-tuberculous bronchopneumonia. Syphilis of the lung I have already said we cannot say anything about. There is no fresh material or necropsied case on which to base any clinical picture of syphilis of the lungs. Pneumoconiosis: it does not seem as if he could have been exposed to the type of irritant that gives rise to that. I do not think that with this history we can say that. I think I have seen x-ray pictures of pneumoconiosis that looked not unlike this. I cannot think of anything else in this climate.

A Student: Fungus infection?

Dr. Cabot: That is possible, but we have no evidence. They had a good chance to look at his sputum.

A Student: It says "yeast." Could it be blastomycosis?

Dr. Cabot: Blastomycosis of the lungs is due to a wholly different organism from this. But I will admit that I know very little about yeast organisms in the lungs. If that is a possibility I do not know enough to say anything about this one way or another.

A Student: How about actinomycosis? He was a dairyman and the sputum showed a yeast-like organism.

Dr. Cabot: That could be recognized only by sputum examination. I should say they had a good chance to look at the sputum and they did not find actinomycosis. If a yeast-like organism can do this thing, then there is nothing more to be said. If so I do not know it.

A Student: Is the lung picture consistent with metastatic carcinoma?

Dr. Cabot: I should not suppose it was. If it is not a non-tuberculous bronchopneumonia, which is a rather unsatisfactory diagnosis, I do not know what it is.

#### INTERPRETATIONS OF X-RAYS

The appearance is that of an extensive diffuse fibrosing process in both lungs with involvement of the pleura on the right.

The picture of the left hip joint is not characteristic of an old tuberculosis, but could be due to any destructive lesion.

#### CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Yeast infection of the lung.

DR. RICHARD C. CABOT'S DIAGNOSIS

Chronic non-tuberculous bronchopneumonia.

#### DR. TRACY B. MALLORY ANATOMIC DIAGNOSES

1. Primary disease.  
Actinomycosis of lungs.
2. Secondary or terminal lesions.  
Passive congestion and central necrosis of liver.  
Necrosis in adrenal.

Dr. Cabot's diagnosis is correct, but the bronchopneumonia was due to the actinomyces. The lung was filled with small cavities and also many small fibrous tubercle-like nodular granulomata which grossly greatly resembled tubercles. The largest of the cavities was about one and a half centimeters in diameter. Many of them contained small amounts of pus, others were rather dry, and the content rather suggestive of caseous material. There was no spread of the lesion to the other organs. Metastatic lesions are of course not frequent in actinomycosis.

#### NOTES BY DR. CABOT

1. It is remarkable how much more trouble the x-rays showed than could have been expected from the record of the chest examination. It emphasizes the necessity of x-ray examination in all patients with chronic cough.

2. Dr. William H. Smith seems to be the only person in this vicinity who can be trusted to recognize actinomycosis from sputum examination.

## CASE OF DYSPNEA AND COUGH

(Case 152818, Case Records of Massachusetts General Hospital. from N. E. Jour. of Med., July 11, 1929, p. 92.)

### CASE HISTORY

A married Canadian woman thirty-seven years old entered January 21. moribund. The chief complaint was cough and dyspnea. A hurried and incomplete history was obtained from the patient and her husband.

Three years before admission she was ill in bed for three weeks with influenza with fever. She had a prolonged convalescence; no inflamed joints. Since that time she had been somewhat limited in her activities by dyspnea, slept on two pillows and had transient evening edema of the ankles. She got along fairly well, however, until three weeks before admission, when she had a slight cold with sore throat, fever and malaise. She developed a persistent cough with yellow and occasionally blood tinged sputum. She had constant pain in the right upper quadrant aggravated by coughing. The dyspnea became worse. She had slight swelling of the ankles. In spite of medical treatment she went downhill steadily.

Clinical examination showed a poorly developed and nourished, very pale woman, moderately cyanotic in artificial light, in acute respiratory distress. Teeth poor. Much dentistry. Throat injected. Tonsils moderately enlarged. Loud coarse moist rales throughout the chest with distant breath sounds at the bases but no fluid. Apex impulse of the heart diffuse and heaving, seen and felt in the 5th space 10 to 11 centimeters from midsternum. Sounds and action normal. Left border of dullness 13 cm. to left of midsternum, 6.5 cm. outside the midclavicular line. Right verner of dullness 4.5 cm. Heart of the mitral shape. A loud blowing apical systolic murmur. No diastolic heard. (Extraneous sounds made the examination unsatisfactory.) A questionable apical systolic thrill. Pulmonic second sound accentuated. Pulses and arteries normal. Blood pressure 110/90. Liver enlarged to below the umbilicus, tender and painful. Slight edema of the ankles.

Temperature 100.4° to 102°. Pulse 120. Respirations 40 to 45. Leukocyte count 20,000.

Urine not recorded.

The patient looked very anemic. Venesection was considered, but seemed inadvisable. She was given intramuscular digifolin, also morphia and caffeine. She slowly failed and six hours after admission died.

Discussed by the Phoenix Clinical Club, at their regular Monday noon luncheon. Diagnostic conclusions by individual members of the Club were given, as follows:

DR. F. C. JORDAN:—Rheumatic endocarditis; abscess or malignancy of liver.

DR. T. T. CLOHESSY: Endocarditis; mitral insufficiency; pulmonary and hepatic passive congestion; pneumonia.

DR. H. P. MILLS:—Endocarditis; pulmonary edema.

DR. F. J. MILLOY:—Bronchopneumonia; cardiac decompensation caused by mitral regurgitation.

DR. W. W. WATKINS:—Mitral valve disease.

DR. V. RANDOLPH:—Chronic endocarditis involving mitral and possibly tricuspid valves; pulmonary infarct on right; possibly terminal pneumonia; chronic nephritis.

DR. FRED HOLMES:—Chronic endocarditis of mitral valve.

### DISCUSSION BY DR. ORVILLE H. BROWN

The salient points in this record are: married wo-

man, 37 years of age, moribund on entering hospital; cough and dyspnea chief complaint. Three years before, she had influenza; slow convalescence and ever since dyspnea. Respiratory tract infection developed three weeks before admission producing purulent blood tinged sputum. She had constant pain in the right upper quadrant exaggerated by cough.

Examination: Emaciated, pale, cyanotic woman. Throat inflamed; tonsils enlarged; coarse rales throughout chest; indistinct breath sounds at bases. Heart enlarged, loud systolic murmur. Liver enlarged. Edema of ankles. Leukocytes 20,000; respiration 45; pulse 120; temperature 102. Given digitalis, morphine and cammeine. Six hours after admission to hospital she died.

This is the type of inadequate record so often obtained in acutely ill cases. It leaves much to be desired and much to be guessed at.

The sequence of events seems to have been an infectious process three years before admission which had a profound effect upon her. She had a slow convalescence and ever afterwards had dyspnea. One should think of tuberculosis as being the cause of the slow convalescence and possibly even of the dyspnea. Nothing is said, however, about a protracted cough after the influenza, nor is anything said of sputum, fever and other usual symptoms of tuberculosis.

Nothing is said of asthmatic breathing; therefore, we must assume that dyspnea was not of the asthmatic type. There was a small amount of edema in the ankles, but there was no other finding to suggest kidney complication or disease. The rales spoken of might be interpreted as indicating chronic bronchitis and an asthmatic tendency. I have, on several occasions, had patients who found it difficult to describe their asthmatic attacks so one really felt sure that they knew what they were talking about.

Tumors or growths about the chest or mediastinum may produce dyspnea, but nothing is in the record to suggest these. In severe anemia there is usually dyspnea, but it would hardly seem warranted to assume that dyspnea in this case came from anemia.

There is a discrepancy in the record about the size of the heart and heart sounds. I interpret the records as of two separate examinations. It seems certain that there was a dilated heart at the time of admission to the hospital and that this became worse. At the time of admission the sounds and action of the heart seemed normal, except that a heaving impulse was felt and seen. Later there was a thrill. At this time the heart was found further loud blowing apical murmur with a questionable dilated and it seems reasonable to assume that the murmur and thrill (?) were the result of dilation.

The liver was enlarged and there was constant pain and tenderness in the right upper quadrant. Both of these findings suggest the damming back of the blood from the right heart. A filling of the lungs with mucous rales and an accentuated second pulmonary suggest damming back of blood from the left heart to the right. The pulmonary moisture suggests pulmonary edema. The constant pain in the right upper quadrant might be more than a congested liver, but there is nothing in the record to suggest gall stones or infected gall bladder, as these are common findings one might guess that such existed. The enlarged liver might make one think of a malignancy, but there is nothing else in the record to suggest malignancy. An enlarged liver may arise from a variety of causes such as: abscess, diabetes, carcinoma, catarrhal jaundice, cirrhosis, syphilis, etc. There is no finding to substantiate the diagnosis other than prolonged passive congestion.



The condition of the heart might be a pericarditis. I think, however, there would have been more syphilis. There might well have been endocarditis.

My guess at the diagnosis is:

1. Death due to acute cardiac dilatation.
2. Pulmonary edema.
3. Chronic cardiac dilatation; moderate decompensation.
4. Chronic tonsillitis.
5. Enlarged liver from passive congestion.
6. Possibly, pulmonary tuberculosis.

Discussion at the Clinical Conference at the Massachusetts General Hospital, in part was as follows:

#### DR. RICHARD C. CABOT

Here again we have to deal with a case without proper study until the end of life.

What they probably found at the bases was dullness, diminished tactile fremitus and breath sounds. It is improper to put that down as "fluid." You do not hear fluid or see fluid.

The diffuse heaving impulse shows hypertrophy. The location of the apex, however, does not show enlargement and is against what the heaving impulse suggests. The midclavicular line ordinarily corresponds with the nipple, so 6.5 centimeters outside the nipple is a good deal. It seems as if there were considerable cardiac enlargement by percussion but not by palpation.

The "mitral shape" means that the heart shadow sticks out in the left upper border corresponding to the left auricle. As the examination was unsatisfactory very likely there was a diastolic murmur.

Notice that the pulse pressure was only 20, very low.

#### DIFFERENTIAL DIAGNOSIS

I think we can say she died of heart disease. We have nothing to indicate any other kind of death. What type of heart disease did she have? She was pretty young to have hypertension. There is no suggestion of hypertension, no evidence of syphilis, no evidence of rheumatism. She is of the age and sex in which usually if there is heart disease it turns out to be rheumatic. Hence my guess is that it is rheumatic. If it is rheumatic heart disease what valve does it usually affect? I am guessing again; mitral stenosis, in spite of the fact that we have only a systolic murmur. If we had had a good chance we might have heard a diastolic murmur. That seems to be the best guess we can make. She was very pale. I am very anxious but unfortunately unable to answer the question, did she have anemia? If she had anemia the diagnosis I have made is not enough. We do not get any anemia from rheumatic heart disease. If she was really anemic I suspect subacute bacterial endocarditis on top of an old process or alone. We cannot do more than speculate about that, as we have no blood culture and could not follow up during life. If she had it, it would account for the leukocytosis.

#### CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Rheumatic heart disease with congestive failure.  
Mitral stenosis and insufficiency.  
Bronchopneumonia.

#### DR. RICHARD C. CABOT'S DIAGNOSIS

Heart disease, probably rheumatic endocarditis of the mitral valve (mitral stenosis).  
Possibly subacute bacterial endocarditis.  
Chronic passive congestion of all the organs.  
Bronchitis.

#### DR. TRACY B. MALLORY ANATOMIC DIAGNOSIS

##### 1. *Primary disease.*

Acute and chronic rheumatic endocarditis and pericarditis; mitral stenosis.

##### 2. *Secondary or terminal lesions.*

Acute bronchitis and slight bronchopneumonia.  
Chronic passive congestion.

Slight arteriosclerosis.

The chief finding in the heart was a marked degree of mitral stenosis. There was acute endocarditis with fresh processes on the mitral, tricuspid and pulmonic valves and also both an acute and an old chronic pericarditis. Myocarditis was observed microscopically.

She had a slight degree of bronchitis but no pneumonia.

The liver and other organs showed marked congestion.

Dr. Cabot: Will you say something more about the myocarditis?

Dr. Mallory: There were lesions of two types. One variety consisted of typical Aschoff bodies, collections of the large mononuclear cells of the tissues which are beginning to be called clasmatocytes nowadays, together with some fibroblasts, the typical pathology of rheumatic infection of the myocardium. There was also acute myocarditis with necrosis of muscle cells and invasion by polymorphonuclears. This acute myocarditis is in all probability not rheumatic in character but a superinfection. Cultures showed streptococcus, as is usual in these cases.

Dr. Cabot: I should like to emphasize certain points. (1) She had mitral stenosis, and we ought to have heard a diastolic murmur. (2) She was pale and presumably anemic, corresponding with the acute endocarditis which Dr. Mallory finds. If we had taken the hemoglobin we should have found a lowering. (3) The liver was enlarged from nothing but passive congestion, as I predicted.

#### THE JOHN PHILLIPS MEMORIAL PRIZE

The American College of Physicians announces the JOHN PHILLIPS MEMORIAL PRIZE of \$1500, to be awarded for the most meritorious contribution in Internal Medicine and sciences contributing thereto, under the following conditions:

- (1) The contribution must be submitted in the form of a thesis or dissertation based upon published or unpublished original work.
- (2) It must be mailed to the Executive Secretary of the American College of Physicians on or before August 31, 1930.
- (3) The thesis or dissertation must be in the English language, in triplicate, in typewritten or printed form, and the work upon which it is based must have been done in whole or in part in the United States or Canada.
- (4) The recipient of the prize would be expected to read the essay at the next Annual Meeting of the College, after which he would be officially presented with the prize by the President.
- (5) The College reserves the right to make no award of the prize if a sufficiently meritorious piece of work has not been received.
- (6) The announcement of the Prize winner will be made not later than two months before the Annual Meeting.

AMERICAN COLLEGE OF PHYSICIANS,  
E. R. Loveland, Executive Secretary,  
133-135 S. 36th Street,  
Philadelphia, Pa.

## NEW MEXICO ANNUAL MEETING

## NOTES OF THE MEETING

The attendance was very good and as the weather was delightful, with the exception of the hard shower which came right after the adjournment sine die, the beautiful scenery around Raton was thoroughly enjoyed by all.

Those registering were:

Dr. E. N. Allan, Rochester, Minn.  
 Dr. W. T. H. Baker, Pueblo, Colo.  
 Dr. O. H. Brown, Phoenix, Arizona.  
 Dr. W. L. Brown, El Paso, Texas.  
 Dr. R. O. Brown, Santa Fe, N.M.  
 Dr. J. M. Britton, El Paso, Texas.  
 Dr. C. R. Bass, Cimarron, N. M.  
 Dr. L. B. Cohenour, Albuquerque, N. M.  
 Dr. C. H. Churchill, Madrid, N. M.  
 Dr. P. T. Cornish, Jr., Albuquerque, N.M.  
 Dr. F. E. Diemer, Denver, Colo.  
 Dr. E. Durham, Raton, N.M.  
 Dr. D. C. Daniel, Mosquero, N. M.  
 Dr. F. C. Diver, Dawson, N.M.  
 Dr. Crum Epler, Pueblo, Colo.  
 Dr. C. Ernest, Pueblo, Colo.  
 Dr. C. B. Elliott, Raton, N.M.  
 Dr. Tobias Espinosa, Espanola, N.M.  
 Dr. R. H. Finney, Pueblo, Colo.  
 Dr. J. E. Funk, Santa Rosa, N.M.  
 Dr. C. B. Francisca, Kansas City, Mo.  
 Dr. R. J. Groom, Santa Rita, N.M.  
 Dr. M. D. Gibbs, Roy, N.M.  
 Dr. A. C. Grimes, Halstead, Kas.  
 Dr. C. S. Hart, Dawson, N.M.  
 Dr. and Mrs. C. S. Harper, Swastika, N. M.  
 Dr. J. W. Hannett, Albuquerque, N. M.  
 Dr. John B. Hartwell, Colorado Springs, Colo.  
 Dr. L. A. Hubbard, Gardiner, N. M.  
 Dr. F. M. Heller, Pueblo, Colo.  
 Dr. Home J. Herymann, Raton, N. M.  
 Dr. W. T. Joyner, Roswell, N. M.  
 Dr. E. W. Jones, Fort Collins, Colo.  
 Dr. W. E. Kaser, Las Vegas, N. M.  
 Dr. W. M. Lancaster, Clovis, N. M.  
 Dr. J. R. Lemmon, Amarillo, Texas.  
 Dr. W. J. Latta, Wagon Mound, N. M.  
 Dr. T. B. Lyon, Raton, N. M.  
 Dr. H. A. La Moure, Pueblo, Colo.  
 Dr. Walter Martin, Battle Creek, Mich.  
 George A. McAlmon, El Paso, Texas.  
 J. H. MacWhorter, El Paso, Texas.  
 Dr. C. F. Milligan, Clayton, N. M.  
 Dr. S. M. Parrish, Raton, N. M.  
 Dr. Stuart Pritchard, Battle Creek, Mich.  
 Dr. J. F. Perry, Los Angeles, Cal.  
 Dr. and Mrs. J. P. Powell, Dalhart, Texas.  
 Dr. I. L. Peavy, Van Houten, N. M.  
 Dr. W. R. Quinn, Dawson, N. M.  
 Dr. P. E. Rice, Raton, N. M.  
 Dr. T. F. Self, Roy, N. M.  
 Dr. A. B. Stewart, Raton, N. M.  
 Dr. A. J. Streit, Amarillo, Texas.  
 Dr. M. F. Smith, Raton, N. M.  
 Dr. E. B. Shaw, Las Vegas, N. M.  
 Dr. D. Tellefson, Los Angeles, Cal.  
 Dr. L. A. Thompson, Springer, N. M.  
 Dr. F. D. Vickers, Deming, N. M.  
 Dr. J. R. Van Atta, Albuquerque, N. M.  
 Dr. S. L. Wilkinson, Belen, N. M.  
 Dr. M. K. Wylder, Albuquerque, N. M.  
 Dr. O. J. Whitcomb, Raton, N. M.

The office of President-Elect was contested in a friendly way by Dr. M. K. Wylder,

Albuquerque, and Dr. F. D. Vickers, Deming, the former winning by an eye (aye) as it were. Dr. Vickers had demurred when his name was proposed, stating that the President should reside in a more central part of the state and since Albuquerque would probably be the next meeting place, it was only proper that the President should be a resident of that city.

Other officers elected were:

Vice-President—Dr. F. D. Vickers, Deming;

Secretary-Treasurer—Dr. L. B. Cohenour, Albuquerque, re-elected.

Members of the Council for three years—Dr. W. T. Joyner, Roswell, re-elected; Dr. H. A. Miller, Clovis, re-elected.

Member of the Council to serve the unexpired term of Dr. Dwight Allison, removed from state—Dr. C. W. Gerber, Las Cruces.

Delegate to A.M.A.—Dr. H. A. Miller, Clovis. Alternate—Dr. W. J. Latta, Wagon Mound.

Members of Board of Managers Southwestern Medicine—Dr. P. G. Cornish, Jr., Albuquerque, Dr. A. B. Stewart, Raton.

Albuquerque was chosen unanimously as the meeting place for 1931.

The banquet at the Hotel Swastika was well attended and thoroughly enjoyed by all. The ballroom of the hostelry is very beautiful, and when, as on this occasion, graced by the many charming ladies of Raton and elsewhere, it seemed a most fitting show place for the ensemble.

Dr. Latta's account of the cyclone which caused much destruction and the loss of three lives at Wagon Mound was most interesting. Most of the members had passed through Wagon Mound en route only a day or two after the hard storm and had a view of the wreckage.

Much credit is due the members of the Colfax County Medical Society for the splendid program of scientific papers and for the measures taken for social enjoyment.

"On to El Paso" was the slogan adopted, to the big Southwestern Meeting to be held there in November, 1930. Many of those present at this meeting announced the intention of attending the sessions and the clinics which the El Paso members assert will be the best ever.



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## SOUTHWESTERN MEETING TAKING SHAPE

Never before in the history of the Medical & Surgical Association of the Southwest have the plans for the annual meeting been so well formulated this far in advance. The Program Committee, under the leadership of the president, Dr. E. Payne Palmer of Phoenix, has planned a Clinical Conference superior even to the well-remembered one which Drs. Crouse and Waite gathered together three years ago.

Packed into the three days of this meeting (November 6, 7 and 8) will be a series of papers, addresses and clinics which will fill every hour of them. The complete program will appear in our September issue, but some of the main features will be the following:

Dr. Alton Ochsner, Professor of Surgery, Tulane University, New Orleans, will discuss the subject of "Acute Craniocerebral Injuries."

Dr. Russell A. Hibbs, Professor of Orthopedic Surgery, Columbia University College of Physicians and Surgeons, New York, will present the subject of "Joint Tuberculosis."

Dr. George R. Herrman, Assistant Professor of Medicine, Tulane University, New Orleans, will present the subject of Cardiology, with two illustrated lectures; one "The Diagnostic Criteria of Heart Disease," and the other "The Treatment of Syphilitic Aortic Disease in the Last Stages."

Dr. Joseph Brenneman, of the Children's Memorial Hospital, Chicago, will represent the subject of Pediatrics; the title of his address has not yet been received.

Dr. William M. Spitzer, of Denver, Colo., will present the subject of Urology, giving an address and holding clinics.

Dr. Walter C. Alvarez, of the Mayo Clinic,

Rochester, will represent the subject of Gastro-Enterology, giving a talk on "Practical Points in the Treatment of Gastro-Intestinal Disease." He will also give a dry clinic on this subject, using lantern slides or motion pictures.

Dr. Philip H. Kreuscher, of Chicago, Professor of Clinical Surgery, Loyola University, will present the subject of General Surgery in two addresses; one on "Fractures Near Major Joints" and the other on "Chronic Osteomyelitis."

Dr. M. Edward Davis, Instructor in Obstetrics at Northwestern University Medical School, Chicago, associated with Dr. DeLee, will present the subject of Obstetrics in a paper and in motion pictures.

Dr. James M. Martin, of Dallas, Texas, Professor of Radiology at Baylor University, will present the subject of Radiotherapy.

Dr. Roy Thomas, of Los Angeles, in charge of the Pneumonia Service at the Los Angeles General Hospital, will present the subject of the "Management of Lobar Pneumonia."

Dr. Charles T. Sturgeon, of Los Angeles, on the Surgical Service of the Los Angeles General Hospital, will present a paper on "The Use of Sodium Amytal in Surgery."

Dr. Allan K. Krause, of Tucson, Arizona, will give an address, the title of which has not yet been received.

Dr. Robert Stanley Flinn, of Prescott, will represent the district of Arizona on the program, giving a discussion of "Diabetes."

Dr. Leroy S. Peters of Albuquerque, will represent New Mexico on the program, his paper being on "Cauterization of Adhesions"—Jacobaeus-Unverricht Method."

Dr. Jim Camp of Pecos, Texas, has been asked to represent western Texas on the program.

Dr. Carl Jumper of Torreon has been invited to represent northern Mexico.

Dr. Edward Jackson of Denver, has been invited to represent the subject of Ophthalmology.

There may be one or two additions to the program, but the above will justify the claim that this Conference will be a very attractive meeting.

The El Paso County Medical Society will prepare clinics to occupy all available time not taken up by lectures and papers.

There will be sufficient entertainment to break the monotony of the meeting, without interfering with its main objects,—to present a high class scientific program and post-graduate Clinical Conference for the medical profession of the Southwest.

### **SAMUEL BROWN NORRIS**

Information comes to us of the death on May 27th of Dr. Samuel B. Norris of Tucson, a member of the Pima County Medical Society, and Fellow of the American Medical Association.

Dr. Brown was a graduate of the University of Illinois College of Medicine, class of 1908, and was forty-four years of age. The cause of death is said to have been pneumonia.

### **ROBERT CRAIG DRYDEN**

The sudden death, in an automobile accident, of Dr. R. C. Dryden, of Pima, Ariz., removed one of the few remaining pioneer physicians of Arizona. Dr. Dryden was one of the charter members of the Arizona State Medical Association, being a young Santa Fe surgeon at Winslow in 1892 when the Association was organized. He was born in 1857, and was seventy-three years of age. He graduated in 1880 from the Missouri Medical College, which school merged with Washington University in 1899. As stated above, he was located at Winslow during the early years of his work in Arizona. For several years he has been practicing in Graham County, being instrumental in helping to organize the Graham County Medical Society two years ago. He was the delegate from that society to the Arizona State Medical Association in Phoenix this year, and it was difficult for those who did not know otherwise, to believe that the little doctor with the black hair and sprightly frame was more than seventy years old. When killed he was transporting some Boy Scouts to their camp in the White Mountains. He left no immediate family, being a widower with no children.

### **HOSPITAL CONSTRUCTION IN ARIZONA**

Work has been started on the new wing to the Good Samaritan Hospital in Phoenix, which will add sixty more beds to the capacity of the institution, as well as providing some other greatly needed facilities. A new power plant will be built in a separate building; this will include a laundry. Among the features of special interest to the medical profession will be an auditorium which will seat about 250 people. This will be used primarily for the Nurses' Training School, but doubtless will be used much for medical gatherings, as well.

The new Southern Pacific Hospital in Tucson has also been started, and will be pushed to early completion. This will be a notable addition to the institutions for treating the sick in Arizona. Most of the work now being sent to San Francisco, out of Arizona, will be handled in the Tucson institution.

The Grunow Memorial Clinic Building has started construction in the block just west of the Good Samaritan Hospital. This building is designed to accommodate a number of doctors, with laboratories for clinical and x-ray work. It is being built by Mr. Grunow, of Chicago, as a memorial to his daughter.

DR. E. PAYNE PALMER, of Phoenix, has returned from the American Medical Association meeting in Detroit, where he was a member of the corps of demonstrators in the treatment of fractures. Enroute home he stopped in El Paso for conference with the Local Committee with regard to the forthcoming meeting of the Medical & Surgical Association of the Southwest, of which he is president.

DR. R. J. STROUD, of Tempe, State Superintendent of Public Health, has returned from attendance at a series of meetings, including the American Medical Association in Detroit, where he served as the delegate from Arizona.

DR. MAYO ROBB, of Phoenix, has returned to his practice from attending the American Medical Association meeting in Detroit.

DR. W. O. SWEET, of Phoenix, has been visiting in Chicago during the first half of July.

DR. W. A. HOLT, of Globe, information reaches us, has been seriously ill for some weeks, with a generalized infection.

DR. T. W. WOODMAN and wife, of Phoenix, have returned after an absence of a month. They visited eastern clinics and attended the American Medical Association in Detroit.

DR. CHARLES B. PALMER, of Phoenix, has returned after a year's absence in postgraduate work in Paris, London and Boston. His work was chiefly in urology and urologic surgery, to which he expects to confine his practice in the future.

### **EL PASO COUNTY MEDICAL SOCIETY**

#### **Regular Meeting, May 12, 1930.**

Meeting called to order at 8 p. m. by the President, Dr. Paul Gallagher. There were present 27 regular members, 13 honorary members, and one visitor (Col. Crimmons).

Minutes of the previous meeting were read and approved.

The first number of the evening was on "Childhood Tuberculosis," by Dr. R. B. Homan, and consisted of lantern slides illustrating the various forms. Childhood type of tuberculosis, as defined by the American Sanatorium Association, is the term used to describe the diffuse or nodular lesions in the lungs and associated tracheo-bronchial nodes that result from a first infection of the pulmonary



tissue with the tubercle bacillus. McPhedran has classified the various forms according to lesions. These are viz:—

A. Focal tuberculosis, caseous or calcified nodules.

B. Tuberculous consolidation of a lobe or wedge, progressive or unstable.

C. Tuberculous consolidation of a lobe or wedge, retrogressive and benign.

D. Diffuse, childhood type, tuberculosis infiltration.

E. Miliary tuberculosis.

F. Tuberculosis of tracheobronchial glands, uncalcified.

F. Tuberculosis of tracheobronchial glands, calcified.

H. Apical, adult type infiltration of children and adolescents.

In type "A" the prognosis is good, only caseous unencapsulated focus in an infant is serious. In type "B" the prognosis is uncertain until this type "B", which is serious, is differentiated from "C." In type "C" the prognosis is good once it has been differentiated from "B." In "D" the prognosis is good unless the lesion increases in density; if so, it is serious. In type "E" recovery is extremely rare. In "F" prognosis is very serious if multiple. In this there is danger of miliary tuberculosis or caseous pneumonia. "G", warranting oversight from 10th to 20th year because often followed by apical lesion, especially if contagion is recent or prolonged. The prognosis in "H" is always precarious.

Dr. Waite then showed specimens from two infants who had died of tuberculosis. The first was the miliary form and was from a child two and one-half years old. On first glance the child seemed well nourished but on further examination it was seen that the tissues were full of fluid and that there was very little muscular tissue left, the child being really quite emaciated. We see a great number of cases of this type among Mexican children. It is usually hard to diagnose miliary tuberculosis in an infant and a history of exposure is quite important. Usually at autopsy a large solitary tracheobronchial gland is found, which is very caseous and breaking down. In the case present, however, this was not evident; instead, caseous mesenteric glands were found.

The second specimen was that from an infant 32 months old who had had an acute illness of twenty days duration. This corresponded to type "B" wherein whole lobes were consolidated. It was really a tubercular form of lobar pneumonia.

Dr. Waite stated that glands do not cast shadows in the x-ray unless they are extremely large or calcified. You can not make the diagnosis from the film alone.

The second number on the program was a paper entitled "Urethroscopy of the Pathologic Posterior Urethra" by Dr. S. Elliot Wilson.

Although only one and one-half to two inches in length, the posterior urethra is subject to many pathological derangements. This is especially true of the verumontanum which should always be closely studied in any examination of the posterior urethra. The anesthetic of choice is a solution containing  $\frac{1}{2}\%$  cocaine hydrochloride,  $\frac{1}{2}\%$  sodium bicarbonate, and  $\frac{1}{4}\%$  chlorotone. Immediately before use two drops of adrenalin chloride (1-1000) are added to each drachm. Four drachms are used in all, one drachm being injected every three minutes and being massaged back into the posterior urethra and bladder. The verumontanum is seen as a projection from the floor of the urethra on withdrawal of the urethroscope from the bladder into the posterior urethra. It is in the form of a dome or cone

or some variation of either. It is enlarged if it almost completely fills the posterior urethra or touches the walls without any evidence of the lateral sulci. Pathological changes encountered are simple congestion, atrophy, hypertrophy, deformities of all types, polypi or papilloma, and granulomata. In seminal vesiculitis the veru should be eliminated and treated thoroughly. In chronic prostatitis, the prostatic follicles are quite often red and swollen. Fulguration and local applications are used in treatment. Fulguration through the urethroscope in certain types of prostatic obstruction has a distinct place in the treatment of these disorders. Many cases of obstruction of the urethra will be found to be due to enormous hypertrophy of the veru, tumors of the veru, congenital folds or valves or stones. Tumors are generally papilloma or polypi and granulomata and are often the cause of a persistent urethral discharge due to constant irritation and stimulation of the adjoining glands. They are also the source of many sexual disturbances and irritations. They are easily destroyed by fulguration. Every case of partial obstruction in boys should be thoroughly examined for stones or congenital folds. Stones if not too large can be removed very easily through the urethroscope. The veru is found either atrophied or hypertrophied in sexual irritation, impotence, and other sexual disturbances. Some men claim that a masturbator can be told by the appearance of the veru. Hematuria, especially terminal, is often due to granulations in the post-montane space or to a very vascular prostate. So all cases should therefore have an examination of the posterior urethra if no cause can be found in the kidneys, ureter or bladder. Diverticuli and ectopic ureters can only be discovered by such an examination. No cystoscopic examination should be considered complete without a careful study of the posterior urethra, and with the cystourethroscope, it can be done in a single examination.

Dr. Jamieson: Dr. Wilson has considered the subject so amply that there is hardly anything left to say. I am just a little afraid of cocaine, especially after my experience with butyn which is supposed to be much less toxic. I use 20 c.c. of a 2% novocain sol. Have seen many cases complaining of pain on intercourse, too rapid ejaculation, and in the terminal stage, impotence. Practically all of these cases show a congestion of the whole posterior urethra; the verumontanum presents a juicy appearance and bleeds on the slightest touch. The application of a 10% sol. of silver nitrate to these cases usually suffices to effect a cure. Fulguration also is useful, but as a rule it is difficult to obtain sufficient anesthesia to stand the spark, which is quite painful.

Dr. Multhaupt: This is a devilish good paper. The routine examination of the posterior urethra after an acute gonorrhea is too often neglected. There is bound to be some residual inflammation there and unless treated properly these cases will come back later on. The too frequent application of silver nitrate to the verumontanum is to be condemned, as it will have a deleterious effect on this delicate structure and will eventually cause atrophy.

Dr. K. D. Lynch: I want to congratulate Dr. Wilson on his paper. As to the anesthetic used, undoubtedly cocaine is toxic, and if used over a long service you will eventually get unfavorable reaction. This is true of any anesthetic, however, regardless of how low its toxicity. Dr. Jamieson's unfortunate experience with butyn probably would not be repeated again, in thousands of cases. A very careful examination should always be made of the anterior and posterior urethras with the urethro-

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PROGRESS THROUGH RESEARCH



scope, but I think that there is a lot of meddlesome work being done here by incompetent men. These men often make repeated applications of silver nitrate from which the patient never recovers. Repeated urethrosopic treatments are often meddlesome and cause more trouble than good.

Major Soper: There is only one procedure here that gives a really good anesthesia and that is caudal block. I have seen them all and have found blocking the most satisfactory.

Col. M. L. Crimmens, U. S. A., then gave the society a brief sketch of the progress that has been made in recent years in the treatment of snake bites. He stated that he and his co-workers have analyzed in the past three years over one thousand reports of snake-bites. He found that the deaths were due to delay in instituting proper treatment. In the majority of cases potassium permanganate had been used and when it was found inadequate, the patients were then sent to him for antivenom treatment. Potassium permanganate plays no part in present day treatment. Mechanical suction in conjunction with anti-venom is the treatment of choice. But the mechanical suction must be kept up till results are obtained—often for twelve to fifteen hours. Never discontinue it simply because you have given anti-venom. The action of the venom is similar, in end results, to that of hemorrhage and so it is necessary to keep up the volume of the blood. Saline is given and when obtainable, blood intraperitoneally or intramuscularly if the case is not urgent, transfusion into the vein for quick results, when available. A blood count should be made every three hours and when the R. B. C. and H. b. get too low antivenom is given every hour or so. Mechanical solution is best accomplished by means of a little rubber bulb similar to a breast pump. A rubber tourniquet is applied at once above the bite. The latter is laid open by an "H" incision, whose limbs are two inches long one-fourth inch deep. Fangs are sought for and removed when found as they sometimes carry tetanus bacilli and gas bacilli. Suction is then applied. The limb will swell. When this swelling increases to twice the natural size a bracelet of cross-incisions is made just distal to the tourniquet; the latter is removed and placed at a higher point, etc. Hot compresses of magnesium sulphate are useful in increasing the discharge from the wounds. 25 mgm. of rattlesnake venom is the minimum lethal dose. The average Texan rattler holds about 220 mgm. while at the Government institute as much as 1000 mgm. have been obtained by milking. It has been stated that in Brazil the average is only about 90 mgm.

After Col. Crimmens's talk Mr. Dumont of the Petrolagar Laboratories, gave a moving picture illustrating the anatomy of the anterior abdominal wall. The dissection had been done by Howard B. Kellog. A thousand feet of very instructive dissection was presented.

The president then read a communication from the secretary of the Texas State Board of Medical Examiners calling attention to the large number of itinerant fakers that are traveling over the state visiting the larger cities and giving lectures on so-called "new" discoveries in diet and methods of diagnosis, etc. He urged that vigorous action be taken against them and that his office be advised of the results.

The president announced that Dr. Hardy was sick in Masonic Hospital and asked the members to visit him.

There being no further business the meeting adjourned at 9:30 p. m.

S. H. NEWMAN,  
Secretary.

## EL PASO COUNTY MEDICAL SOCIETY

Meeting of May 26, 1930

Meeting called to order at 8 p.m., by the president Dr. Paul Gallagher. There were present 39 regular members, 19 honorary members and 3 visitors, Dr. Camp, of Pecos, Dr. Gregory and Dr. Rasmus (D.D.S.).

The minutes of the previous meeting were read and approved.

The president read a communication from the University of Bordeaux, France, announcing a post-graduate course for this summer in ear, nose and throat work. Another announcement was read concerning the semi-annual clinic of the Tarrant County Medical Society starting June 19th. A letter was then read from the Legislative Committee of the State Medical Association urging that immediate action be taken in an endeavor to get Senators and Representatives in the Texas Legislature who are favorable to legitimate medicine.

Dr. Swope then reported the following clinical case:

American, age 30, public accountant. Past history irrelevant. In 1925, he had an apparent spontaneous collapse of the right lung; in 1927, a collapse of the left lung, and in February this year, another collapse of the right lung. All of these collapses followed close upon a severe nervous strain and were all entirely relieved within thirty days. Following the second collapse in 1927, he was examined by Dr. Werley and Dr. Egbert and an x-ray examination was made by Drs. Cathcart and Mason. All occurred in a diagnosis of spontaneous pneumothorax. An examination now shows an apparently normal lung and the x-ray fails to reveal any pathology. The patient's chief complaint is nervousness, inability for continuous application, irritability, insomnia and sweating of hands and feet. Physical examination, entirely negative. Dr. Swope doubted seriously if actual collapse ever actually occurred in spite of the x-ray findings in 1927, which showed the pleural space filled with air.

Dr. W. W. Britton, who examined the patient together with Dr. Swope and who made x-rays recently, stated that this was a most peculiar case and he was convinced that it was one of mistaken diagnosis. There is no pathology now, there had been no loss in weight, no fever and no hemorrhage. It does not seem possible for such a condition to have existed with such complete recovery in such a short length of time without treatment of any kind. The x-ray of 1927 undoubtedly shows collapse of about the outer third or fourth of the lung without adhesions. The x-ray now is perfectly normal. It made him think of a case sent here from Dallas two years ago to Dr. Ralph Homan, which went on to autopsy. There Dr. Turner found he had a bullous emphysema. So he thought likely that was the true diagnosis in Dr. Swope's case.

Dr. Ralph Homan stated that the case referred to by Dr. Britton had been sent to him with a diagnosis of bilateral pneumothorax and that the immediate cause of death had been coronary thrombosis.

Dr. Waite said he wondered if it was not harder to get over a case of bullous emphysema than one of pneumothorax.

Dr. Laws said that in post-mortems we often see small areas of emphysema near the surface of the lungs. He thought that this case was not one of pneumothorax but one wherein an emphysematous bleb had ruptured into the pleural cavity.

Dr. Ralph Homan thought it was pretty hard to figure out how, with an emphysematous bleb rupturing into the pleural cavity, the patient could be up and about apparently well within thirty days.

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Dr. Cathcart could not agree that this was a case of bullous emphysema. The x-ray taken in 1927 shows a uniform filling of the pleura with air.

The next number on the program was the showing by lantern slides of "Some Interesting Dermatological Conditions," by Dr. Leslie M. Smith. The views presented were, viz:

1. Case of epidermolysis bullosa.
2. Case of congenital hyperkeratosis of palms and soles.
3. Cutaneous horn.
4. Lichen planus, generalized.
5. Erythema induratum.
6. Scrofuloderma.
7. Tuberculosis verrucosa cutis.
8. Blastomycosis of leg.
9. Mycetoma.
10. Dermatitis gangrenosa.
11. Early case of leprosy, maculo-anesthetic type.
12. Nodular type of leprosy.
13. Case of rupial secondary syphilis.
14. Ringworm of nails and feet.
15. Bromoderma.

The last number on the program was the presentation of motion pictures illustrating the 'Anatomy of the Abdominal Viscera.' It was presented through the courtesy of the Petrolagar Laboratories.

Under unfinished business, Dr. Waite outlined plans for the meeting of the Medical & Surgical Association of the Southwest to be held here next November. The Executive Committee was showing great enthusiasm in putting on the best meeting held so far. A number of distinguished guests had already been booked. It was planned to advertise the meeting extensively and a large attendance was anticipated. A five-dollar registration fee would probably take care of all the expense.

Under miscellaneous business, Dr. Outlaw stated that the Health Department was getting cooperation from only about 50% of the physicians in reporting contagious diseases. The Medical Officers of Fort Bliss are reporting 100% the cases of contagion among their school children. He was especially anxious to have the doctors report their tuberculous patients, mainly for statistical purposes. To this end he proposed to get out post cards and distribute them to the doctors on which they would be given more of our support and thought that if a to get the full cooperation of the Society in reporting all diseases made reportable by law.

Dr. Laws felt that the Health Department should be given more of our support and thought that if a little pressure were brought to bear, we would probably do better. In regard to reporting tuberculosis, however, some men would probably object. He

recalled that several years ago the State Health Officer sent out requests for such reports. The patients whose names were sent in were immediately flooded with literature. In many cases this was resented by the patient. As Councilor of the State Association, he had been asked to come before the County Society and request that all doctors be punctual in reporting their births, so that Texas might be admitted to the Registration area.

Dr. Waite suggested that the proposed post cards for reporting tuberculosis might include questions, the answering of which would indicate whether or not the case should receive further attention from the Health Department.

Dr. Outlaw said that these reports would be strictly confidential and he promised that no literature of any kind would be sent the patient. One purpose of these reports was the curtailment of unauthorized rooming-houses and practitioners from preying on these people.

Dr. Waite then made a motion that Dr. Outlaw enforce the law dealing with the reporting of contagious diseases. Motion seconded and carried.

Dr. Frederick H. Blanchard's application for membership was then read. On motion by Dr. Barrett, seconded by Dr. Laws, he was unanimously admitted into the Society.

Dr. Gallagher announced that Dr. Hardy, who has been sick at Masonic Hospital, was very much improved.

The President then announced the following incomplete committee personnel for the Southwestern Association meeting:

Advisory Committee: All past-presidents of the El Paso County Medical Society.

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Detailed information furnished on request.

**Executive Committee:** Dr. Paul Gallagher, Dr. J. W. Laws, Dr. S. H. Newman, El Paso; Dr. W. Warner Watkins, for Arizona.

**Banquet and Entertainment:** Dr. W. R. Jamieson, Dr. James J. Gorman, Dr. John E. Morrison.

**Hotels and Railroads:** Dr. R. L. Ramey, Dr. F. P. Miller, Dr. C. M. Hendricks, Dr. J. H. Gambrell.

**Guests:** Dr. K. D. Lynch, Dr. H. E. Rogers, Dr. A. W. Multhauf, Dr. F. C. Goodwin.

**Golf:** Dr. James Vance, Dr. Ralph H. Homan.

**Scientific Exhibits:** Dr. G. Werley, Dr. John W. Cathcart, Dr. E. A. Duncan, Dr. George Turner, Dr. J. Mott Rawlings.

**Round Table Luncheons:** Dr. W. L. Brown.

**Lantern Slides:** Dr. A. P. Black.

**Commercial Exhibits:** Dr. T. J. McCamant, Dr. Paul E. McChesney.

**Hospital Clinics:**

Masonic—Dr. F. P. Miller

Providence—Dr. Frank P. Schuster.

Hotel Dieu—Dr. E. W. Rheinheimer.

City-County—Dr. S. H. Newman.

**Reception—Hotels and Trains:** Dr. R. B. Homan, Dr. S. A. Schuster, Dr. J. A. Pickett, Dr. Harry Leigh.

**Transportation:** Dr. O. E. Egbert.

Dr. Egbert then gave the report of the Radio Committee covering the six months' radio program that had been voted by the Society late last year. The program has now been completed with the exception that we still owe some money to the broad-

casting stations. Fifty-nine members have donated \$6.00 each, but there is still owing \$153.50. This makes the entire six months' program to have cost \$507.50. He wanted to know how the Society proposed to take care of the deficit.

The Chair thought that this deficit should be made up by voluntary contributions and should not come out of the Society's funds. He called for a volunteer Committee to ask for contributions from the members. Dr. Waite, Dr. Ralph Homan and Dr. Outlaw volunteered to serve on such a committee.

Dr. Gorman then called the Society's attention to the fact that most of the papers presented at our meetings are not turned in and consequently we are not getting our share of space in Southwestern Medicine. He offered to have the papers typewritten if the members would only turn them in in proper shape.

The president then called the Society's attention to the recent death of our honorary member, Dr. Howard Thompson, and appointed Dr. Swope, Dr. Werley and Dr. J. A. Rawlings, as a Committee to draw up resolutions expressive of the Society's sentiment.

There being no further business, the meeting adjourned at 10 p. m.

S. H. NEWMAN, M. D.,  
Secretary-Treasurer.

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Superintendent



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Paul A. Johnson, M.D., Resident Physician and Internist.

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# MINUTES OF THE MEETING OF THE THIRTY-NINTH ANNUAL SESSION OF THE ARIZONA STATE MEDICAL AS- SOCIATION, HELD IN PHOENIX, APRIL 24 TO 26, 1930.

(Continued from June Issue)

## REPORT OF THE COMMITTEE ON MEDICAL DEFENSE

Your committee on medical defense has taken official cognizance of five separate cases during the year. They were the Looney case (Prescott); Perkins-Gungle-Langham case (Morenci); Tarasoff, (Phoenix), and the Knotts case (Yuma). In the Morris Hospital case in Safford we acted only in an advisory capacity.

The Looney case was refused a new trial; the Langham case was non-suited; the Tarasoff case was non-suited. The Knotts case was an expensive bitterly contested situation.

At the present writing we have but one threatened case for consideration.

Defense Fund Receipts .....	\$ 4,802.75
Expenses .....	1,699.15
Total amount available for Med. Defense	12,816.04

During the current year we have expended \$2216.53; of this amount \$1485.63 was used to defray the expenses of the Knotts case in Yuma. With a membership of ten at \$6.00 each for medical defense it would take Yuma County 25 years to offset this expense, providing they do not have any further difficulty. The total sum expended in Yuma county during the period of existence of our Medical Defense has been \$1642.63; at the same basis it will take Yuma County 27 years to reimburse the State Association.

This situation is cited to illustrate how expensive it is for physicians to criticize one another.

J. E. BACON,

Chairman Med. Defense Committee.

## EXPENSE OF MEDICAL DEFENSE SINCE ITS INCEPTION IN 1916

11-21-17—John W. Flynn .....	\$ 519.45
7-23-18—Kauil case .....	50.00
6- 6-19—E. Payne Palmer .....	114.80
5- 5-20—O. H. Brown .....	50.00
6- 3-20—Shackelford - Nelson .....	43.65
7-23-18—Bim Smith .....	552.35
10-20-20—Tindall case .....	27.00
5- 5-20—Wilkinson .....	2203.05
1-14-22—Smelker .....	365.93
1-21-27—Melick .....	145.45
9-25-28—Looney .....	388.35
5- 3-29—Laugharn - Gungle .....	155.90
5- 3-29—Knotts .....	1485.63
7- 9-29—Tarasoff .....	150.00
3-22-26—Campbell .....	130.00
Total .....	6381.56

## COMMENT BY ASSOCIATION ATTORNEYS

Dr. D. F. Harbridge,  
Secretary, Arizona State  
Medical Association,  
Phoenix, Arizona.

Dear Sir: During the past year our previous record of no recoveries in mal practice cases has been maintained. During that time we have had only two or three new cases, one of the cases the case of Mammon vs. Drs. Laughran and others in Greenlee County is still pending. It was set for trial early in the winter, but about the time of the setting the attorney for the plaintiff requested that the setting order be vacated, and stated that in his

opinion he would not be able to establish a case, and that case will in all probability be dismissed without further proceedings.

In the case of Chris Christainsen vs. Drs. Looney and Allen of Prescott, the judgment of the Superior Court of Yavapai county was affirmed by the Supreme court of this state. In that case the law, by the opinion of the court, is now established in this state with the following effect that no civil liability of any kind or character whatever may attach to any physician acting as a member of the Sanity Board appointed by any court of this state, unless it can be affirmatively shown that the judgment or decision of the physicians as to the sanity of the defendant was actuated by malice or fraud. In other words, the opinion and judgment of a physician acting as the representative of the court in the determination of the question of insanity of any defendant, even though the conclusion reached by the physician be erroneous, does not make him liable civilly.

In the case of Mowery vs. Tarasoff tried in the Superior court of Maricopa county, Arizona, the court at the close of plaintiff's case, directed a verdict in favor of the defendant and against the plaintiffs, and dismissed the case as against Dr. Tarasoff upon the ground that there was no medical testimony substantiating the charges of malpractice contained in the complaint.

A situation of interest to the Association has arisen in Safford, Arizona. Two physicians there have erected a modern hospital suitable for the handling of all cases originating to that county. This hospital is placed upon a lot in the residence district. The owner of an adjoining lot brought an action to enjoin the erection and conduct of that hospital upon the ground that it was a menace to the health, safety and comfort of the surrounding inhabitants of the town. The case has not yet been tried, but from the preliminary attacks upon the complaint, the court has taken the view that the modern hospital is not in itself a nuisance and that it is not a menace to the health, safety or comfort of the owners of adjoining property or the residents of the surrounding neighborhood. This case is not one which is being defended by the Medical Defense Committee of the Association, but it is one of general interest to physicians. We believe that the Superior Court will not sustain the injunction and that such will be the ruling of the Supreme Court of this State if it is carried that far. Unless there are some restrictions running with the land upon which the hospital is built or a zoning ordinance in effect in the city where located, and unless it can be shown that the hospital is being conducted in such a way as to be unsanitary and not in accordance with modern methods, we believe that a hospital can be erected anywhere in a city.

A large part of the success in the treatment of these mal practice cases must be attributed to the splendid cooperation of the members of the Association in rendering every aid possible in the defense of its members. Without this hearty co-operation we could not have hoped to attain the success which we have with these cases, and the importance of this feature of the work cannot be over-emphasized.

We wish further to say that we believe that the freedom of the members of this association from suits of mal practice can be in no small measure attributed to the high standard of ethics and rigid requirements as to education and training required by members of this association before physicians are licensed to practice medicine in this state and permitted to become members of this Association, and such freedom from such suits can

only be maintained by rigidly adhering to the high standard adopted by the members of your profession.

Trusting that the members of the Association will continue to be free from the annoyance of such suits, and thanking the members of your Association for the assistance rendered us during the past year, we beg to remain

Respectfully yours,

SLOAN, HOLTON,  
McKESSON & SCOTT,

By CHARLES R. HOLTON.

**REPORT OF THE COMMITTEE ON NATIONAL  
LEGISLATION, ARIZONA STATE MEDICAL  
SOCIETY**

R. J. Stroud, M. D.

At present there are several Bills before Congress relative to various phases of national legislation which affect doctors. Among them are:

1. Federal Control of Narcotic Drugs.
2. Federal Control of the activities of the states in the field by hygiene of mothers and children.
3. Provision at the expense of the Federal Government of medical surgical nursing, and hospital service for rich and poor veterans suffering from diseases and injuries having no relation to military service.

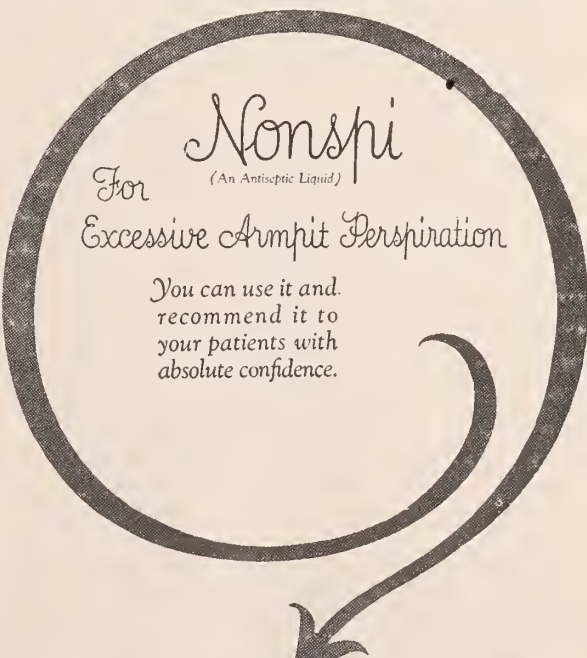
No. 1. Federal Control of Narcotic Drugs. Representative Porter has drawn up several Bills relating to narcotics—Bills 3053; 9054; 10561 and 11143. The Bill 10561 is the best of the lot because Representative Porter was approached by the representative of the American Medical Association to see that the rights of the physicians were upheld. All of these laws do the physician no good and do a great deal of harm. They do not propose to have any co-operation between the states and Federal Narcotic Division and the physician would be licensed by a veritable autocrat in the Commissioner of Narcotics and we would be subject to his whim. The charge that a great many physicians are themselves addicted to the use of narcotics has never been substantiated by figures and the narcotic division claims that physicians can get themselves large amounts of morphine for their own addiction. The American Medical Association claims that this is not true. In Bill H. R. 11143 there is no provision for the scientific research of rare alkaloids of narcotic drugs while it allows certain importers to import coca leaves which do not contain cocaine or ecgonine in any quantity. The chief objection to all of these Bills is to substitute a single federal officer ranking as a commissioner in place of a Federal Narcotic Control Board made up of three cabinet officers. There is not time to go into the other features of the Bill.

No. 2. Federal Control of the activities of the states in the field of hygiene of mothers and children. There have been many bills which can be called miscellaneous Sheppard-Towner Bills. These are other proposals to substitute state control with federal domination. As a matter of fact the states whom they help finally have to pay the taxes, the state taxes being paid into the Federal Treasury. The Bill which more nearly proposed something good is the Cooper Maternity and Infancy Health United Bill H. R. 9888. The State of Arizona raised its quota to double at the last session of the legislature to meet the loss of federal funds because the Sheppard-Towner Act was to be suspended by agreement and by the same token any other state could supply those needs. The trouble with a legislation of this kind is that it places lay people in charge of these monies and they have professional people working under them. The duties they have is to see

how many nice forms can be submitted to the Federal Government. H. R. 9888 provides for \$1,500,000 to be expended—half to the Welfare of Mothers and Children and the other half to the local health units or organizations. Of the half turned over to the Welfare of Mothers and Children there is no known way of administering this in the State of Arizona except through the Child Welfare Division which cannot use this money beneficially but federal subsidies of any other nature cannot go through because the women's organizations throughout the country want children welfare bureaus sustained. Under the other provision of the Bill the \$750,000 can be expended wisely through the state health departments in different counties because it is entirely under the control of medical men. Even at that provision is not made to use the whole appropriation. With all its defects a state with the comparatively limited wealth and rural tendencies as Arizona is, would get in federal subsidy a good many more dollars back when compared with a state as large as California. This is a better Bill than the Sheppard-Towner Bill because one-half of the monies are to be expended by medical health men directly. As a public health man, I can see where Arizona would be benefited by this Bill but the other Bills along this line would simply be a waste of public monies.

No. 3. The provisions of medical surgical nursing and hospital service for rich and poor veterans suffering from diseases and injuries having no relation to military service. This presents a serious situation.

A report of the directors of the Veterans Bureau shows that on June 30, 1929, patients entering hospitals for non-service conditions and remaining un-



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der treatment from that time, formed 43 per cent of the hospitalization. 27,437 were patients in the hospital of whom 11,823 were patients who were there because of diseases and injuries not connected with military service. During the fiscal year ending June, 1929, admissions to all hospitals for the treatment of non-service connected conditions numbered 56,892 or 58 per cent of all admissions. Admissions for service connected injuries decreased less than 1200 while those for non-service injuries increased nearly 12,000. Even with as much as 40 per cent of all hospital beds under control of the Veterans Bureau occupied by patients suffering from non-service connected injuries, there were on December 1st, 1929, only 184 veterans awaiting hospitalization for diseases and injuries connected with the service. Obviously these veterans could easily have been accommodated by ousting some of the veterans who were receiving treatment for non-service connected causes.

Moreover at that time money had already been appropriated, as yet unexpended, sufficient to provide 3100 additional beds. Notwithstanding this, the congress appropriated \$15,950,000 for additional hospital construction. The conclusion is that this entire appropriation was for the treatment of veterans suffering from diseases and injuries non-service connected. You can figure out the approximate number of new beds that this appropriation provided and the cost per day for the Federal Government for maintenance besides the 3100 provided for under a previous appropriation. It is not unfair to state that these beds will only be needed for a relatively limited length of time to serve men and women who now rank as veterans, the war ended in 1918 and certainly there should be a constant decrease in the number of such persons living. Even if we allow for possible increasing illness due to advancing age, the time must come, and relatively shortly, when the number of possible patients will be very much reduced.

An interesting question would be, What will be done with the millions worth of investments in the hospital plants in the Veterans Bureau at that time. No one can begrudge veterans, suffering from diseases and injuries incurred in the line of duty, the money that the congress can appropriate for them. In the interests of these men injured in the line of duty, the congress should conserve federal funds for their benefit—not spend them for the relief of disease and injuries not received in service, instead of putting 30 or 40 million dollars in hospital plants that will be of but temporary value and that will require enormous annual outlays for maintenance; and that after all will be available only to persons who can leave their homes for treatment; the congress would certainly have done much better to have provided for the rendering of medical and surgical service at government expense by local hospitals and physicians—or at least have provided adequate pensions to allow veterans who are disabled to meet their own wants with a respect not only to medical and surgical service but with respect to food, fuel and clothing.

## MEMBERSHIP ROSTER ARIZONA STATE MEDICAL ASSOCIATION

### Cochise County Medical Society

Adamson, E. W., Douglas.  
Alessi, N. V., Douglas.  
Armstrong, J. J. P., Douglas.  
Bledsoe, N. C., Bisbee.  
Bridge, George A., Bisbee.  
Causey, Z., Douglas

Cook, John, Douglas.  
Cruthirds, A. E., Bisbee.  
Dewey, L. A., Bisbee.  
Duncan, A. K., Douglas.  
Durfee, R. B., Bisbee.  
Ferguson, Robert, Bisbee.  
Fitzgerald, G. H., Bisbee.  
French, Harry J., Bisbee.  
Helm, H., Douglas.  
Hunt, C. H., Bisbee.  
Jay, Charlton, Bisbee.  
Kohlenberger, Charles, Bisbee.  
Moon, O. B., Bisbee.  
Roberts, E. S., Bisbee.  
Sudlow, E. L., Bisbee.  
Watkins, Thomas, Bisbee.  
Wilson, J. C., Willcox.  
Wright, F. T. (Honorary) Douglas.  
Yellott, Richard E., Benson.

### Coconino County Medical Society

Froncke, M. G., Flagstaff.  
Manning, G. F., Flagstaff.  
Miller, E. S., Flagstaff.  
Raymond, R. O., Flagstaff.  
Schermann, A. H., Flagstaff.  
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Volume XIV.

AUGUST, 1930

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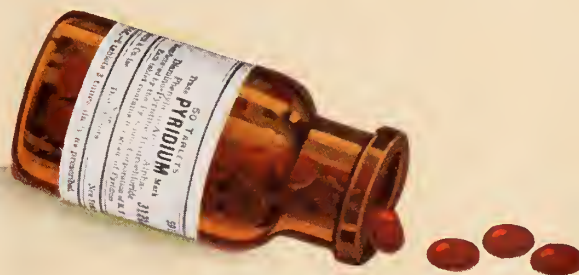
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¾ cup cold chicken broth or water .....	....	....	....	....	....
1¼ cups boiling chicken broth, fat free .....	....	....	....	....	....
¼ teaspoon salt .....	....	....	....	....	....
Pinch pepper .....	....	....	....	....	....
1 cup cooked chicken, cubed .....	125	24	20	....	....
¾ cup cream, whipped ..	55	1	22	1.5	....
<b>Total</b>	<b>31</b>	<b>44</b>	<b>1.5</b>	<b>625</b>	
<b>One serving</b>	<b>5</b>	<b>7</b>	<b>....</b>	<b>83</b>	

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## ORGANIC INTERNAL SPLINTING OF THE FRACTURED OR DETACHED OLECRANON

WILLIAM LISLE BELL, M. D.  
Oakland, California

(Read before the thirty-ninth annual meeting of the Arizona State Medical Association, held at Phoenix, Arizona, April 24 to 26, 1930.)

In a consideration of all fractures, and particularly those near or involving joints, much weight must be given various muscle changes known as fibrosis, and the formation of impinging and obstructing new bone due to fracture itself and to torn and displaced periosteum and, last, rigid obstructing scar tissue. Nature made joints for the purpose of full motion, muscles likewise for full excursion and anything short of this must be in the nature of a compromise.

Practically we have in the human anatomy but three bony structures which when fractured are spread apart by muscle pull: the os calcis, the patella, the ulnar olecranon. This little paper deals with the olecranon, although in passing it may be said that in a modified way the remarks to follow may be applied both to the separated os calcis and separated patella.

Even at the present we still see and hear of frequent fibrous union in the olecranon. Why should the olecranon be so distinguished and apart? What are the causes? Nothing more than the mechanical arrangement due to the necessary structure of this lever working across and between the humeral condyles exactly after the nature of a walking beam or see-saw.

If, then, in a fracture and separation we flex the forearm, the gap is widened, the olecranon is pulled upward and at a right angle to its parent shaft, and, if united at this angle, wholly prevents extension, due to

the fact that it impinges upon the olecranon fossa on the slightest extension and would not thus mechanically permit extension, even would the fibrosed biceps relax sufficiently. What, then, do we get from the diametrically opposed method, the straight arm or full extension method? First, better apposition of fragments if we wait long enough. But if we wait long enough for bony union we also have pretty fine triceps rigidity and when we start flexion we impose an enormous leverage at the fracture plane and often gradually pull our callus out like a piece of taffy. As A. J. Ochsner has said, whichever way we do, we always wish we had done the other.

Either one of these methods involves much guesswork, many misgivings and no little discomfort to the patient. What have we between these two, or, rather, what definite method that will eliminate most of the bad faults of both preceding methods? None that I know, other than open fixation, and by open fixation I mean solid anchoring, strong, rigid, dependable internal splinting; not darning or suturing or flimsy flexible methods. Nor do I wish to go down on the records as one who advocates open work where other methods will answer.

I think the general bone man should not operate over one per cent of the full list of his fractures. For the man who narrows his work to autogenous onlay or inlay or solely to ununiteds, the percentage would naturally run almost one hundred per cent of open work. This means that any particular set of figures from any particular man or clinic are useless. Many of the wholesale clinics do not see a great portion of their cases after they leave, many of them drift off and die (unofficially) out of the clinic record, and a complete five or six year follow-up entails too much expense.



We must then, reserve the right to use what in our hands gives us the most satisfactory result. But we must first convince ourselves that the mechanical end is right, the surgical picture sound, and that we have mastered the technic of the operation to the minutest detail.

My own conception of the rapid and complete restoration to function of an elbow with a detached olecranon, is an immediate operation, within six to twenty-four hours, general condition, of course, permitting. A few hours of chemical skin preparation followed by thirty minutes of germicidal lamp and a second safety chemical preparation. Linear incision over olecranon and 9/32 ox-bone screw completely through olecranon longitudinally and three to four centimeters along the central axis of ulnar shaft. The screw should be large and long enough to maintain accurate apposition against side stress when the forearm is fully flexed. A clearance drill hole is drilled through olecranon so that screw will slip through freely, a tap or smaller drill hole is then drilled into the shaft, tapped or threaded gently. When the screw is passed through olecranon and screwed into the shaft the fracture zone is tightly closed and the longitudinal continuity of the bone accurately and rigidly reestablished. Most of the screw head may be cut off, the tendons fall over it. No need of buried sutures. The ulna is now readily reestablished for weeks at least, no muscles are fibrosed, time has not permitted impinging bone to grow, we have full motion in the elbow immediately. A sling and soft dressings, no particular position to induce discomfort, full extension in morning, full flexion in evening, as early as the second or third day, which means muscle excursion, no fibrosis, and practically full function in four to eight weeks.

Following my theme earlier in this paper, no statistics shall be given. Although it may be said to you truthfully that this technic and this method have been used for something like seventeen years and are not brought to you as mere theory. But, as in all other surgery, you will have to select your case and your method, and times might occur when it would be useful as an addition to the more conventional and certainly longer and more painful methods.

In closing, I wish to say a word of Dr. John B. Davidson of Chicago, a modest surgeon who many years ago wrote a modest book. It was unheralded and is today little known. It was my honor to receive a manuscript copy as a gift from the author and in

that small volume practically all the principles of bone screw fixation are laid down. My own narrow opinion is that under certain well-defined conditions, the tough, sometimes absorbable, properly applied modern young ox-bone screw in proper size is superior, at least at this writing, to any other form of internal splinting.

## THE MANAGEMENT OF THE PNEUMOTHORAX PATIENT

CHARLES S. KIBLER, M.D.,  
and

SAMUEL H. WATSON, M.D.  
Tucson, Arizona

(Read before the thirty-ninth annual meeting of the Arizona State Medical Association, held at Phoenix, Ariz., April 24 to 26, 1930.)

The success or failure of pneumothorax treatment depends so largely on careful management that it seemed worth while to present a few of the salient points at this meeting.

There is no pre-operative way of determining whether or not pneumothorax can be given. X-ray photographs, physical signs, or a history, do not determine this with any degree of accuracy, except the history of healed pleurisy with effusion, which precludes the possibility of successfully instituting this treatment.

The greatest factor of success in collapse of the lung is very careful medical supervision. The physician should examine the patient at least once weekly during the first four months, evaluating symptoms, as fever, amount and character of expectoration, etc., using the fluoroscope frequently to determine the optimum pressure for the patient at that particular time. The optimum pressure can be determined by the use of all the aids at our disposal and not by any one method alone. This optimum pressure can be determined by the following means: First, by physical examination to determine the amount of displacement of the mediastinum, ascertaining the extent of cardiac displacement and the amount of depression of the diaphragm downward; second, by evaluating symptoms such as dyspnea, the type and amount of cough, the amount of expectoration, the degree of fever, the general feeling, appetite and weight curve; third, by x-ray and fluoroscope. A displacement of the mediastinal structures over one and one-half inches is best avoided under ordinary circumstances. Even though the fluoroscope does not show excessive gas pressure, the patient may be very dyspneic and uncomfortable, causing him to lose ground, because

that air pressure is excessive for his need at that particular time.

Symptoms of excessive pressure often are: loss of appetite and weight; dyspnea, especially after the air fillings; difficulty in raising sputum; excessive tight cough, and persistent fever. At times, it is difficult to determine whether there is a need for less or more pressure. In this event it is best to try a lower pressure for a few weeks. The tendency is, in the majority of cases, to give excessive pressure rather than insufficient pressure. The cough of too much air is rather characteristic. It has a brassy, obstructive, irritative quality and is rather non-productive. The sputum shows excessive mucus.

The optimum pressure will vary greatly during the collapse period and the pressure must be gradually increased as the pneumothorax progresses. It varies greatly in different individuals depending on the resistance of the mediastinal structures and the presence and extent of adhesions. It is highly individual and constantly variable.

One of the most important principles in the management of pneumothorax is to give the lowest pressure that will induce a satisfactory result in alleviating the symptoms at that particular time. It makes little difference how completely the lung is collapsed provided there is enough pressure to preclude the danger of adhesions forming. Frequently, to induce a satisfactory collapse and a reduction of sputum would necessitate pressures decidedly detrimental to the general well-being of the patient. Therefore, our attention should not be focused on relieving any one symptom, as cough and expectoration.

Animal experimentation has rather conclusively proved that even a normal lung will undergo rather general fibrosis when collapsed by air. When pressures are used as low as possible to induce a satisfactory result, it seems that fibrosis, with the difficulty in re-expansion of the lung, is much less likely to occur than in cases which have had continued high pressures.

It has been a rather generally accepted fact that a pneumothorax patient is always underweight. It is our opinion that, if the patient is observed very carefully and the lowest pressure is maintained that will produce a satisfactory result, this patient will gain weight almost as well as one not taking gas.

It is excessive pressure that causes underweight and depresses the diaphragm, which, in turn, causes pressure on the di-

gestive organs. The resulting anorexia in particular is the cause of failure to gain.

Seldom can cavities be collapsed satisfactorily, nor should we expect it. The reason is probably that there is a fairly resistant layer of inflammatory or scar tissue surrounding cavities. They are obliterated by natural healing under the favorable conditions induced by pneumothorax. Pressures adequate to collapse cavities usually are detrimental, causing symptoms of excessive pressure.

Concerning the amount of air to be given, initial fillings should be between 250 and 300 c.c. and no more, except when it is given to control hemorrhage. It is unwise to make the interval of gas fillings so long that it requires over 500 c.c. of air at one time in the average-sized chest. Reactions of fever and pleurisy are apt to follow. It is better to give smaller amounts oftener. After a year's time the pleural cavity becomes less elastic and the amount of gas given at one filling should be reduced. Great variations of pressure from negative to positive are undesirable, for this results in too much variation in lung volume. In those cases in which gas is given over two years this makes little difference as there is only a slight change in lung volume. The pleural cavity has a marked ability to compensate for either too little or too excessive pressure. This is particularly noticeable in the presence of pleurisy on the pneumothorax side.

Fluid forms, most observers agree, in at least fifty per cent of pneumothorax cases. The safest procedure is to withdraw fluid if the accumulation is over 500 c.c. in amount, and replace with air. Fluid itself is unreliable as a method of compression. We know and can depend on the rate of absorption of air. It is remarkably constant. The absorption of fluid is not. Five hundred to one thousand cubic centimeters of fluid can be absorbed in a few days, allowing the pressure to fall dangerously low and forming adhesions. Clear fluid is simply aspirated and replaced by air, adding enough additional air to reach the optimum pressure.

Turbid or purulent fluid is aspirated and examined for tubercle bacilli by the usual stain method. Turbid fluid, if free from tubercle bacilli can be managed by aspiration and injection of gomenol in oil at each air filling. In practically every instance it will clear and in due time usually ceases to accumulate. Purulent sterile fluid with tubercle bacilli is very difficult to manage by the above method. Most phthisiologists feel a thoracoplasty should be performed for its relief, which treatment has been found the



most satisfactory. However, there has recently been some encouragement in the injection of gomenol in oil into the pleural cavity with frequent aspiration. It is used in amounts from one hundred to three hundred cubic centimeters, after warming to body temperature. This preparation is a non-toxic volatile oil obtained from a species of myrtle used in three to seven per cent solution in light mineral oil. Gomenol is not easily soluble in oil in percentages higher than seven per cent. Certainly we have been more successful with its use than with any other agent for purulent fluid in pneumothorax. Considerable amounts remain in the pleural cavity over long periods, with little absorption.

We should constantly bear in mind that a gassed lung is not a healthy lung even though it ceases to produce symptoms. There is an active tuberculosis still present, as well as virulent tubercle bacilli, which can and will spread to the contra-lateral lung or other parts of the body under favorable conditions. After all, pneumothorax only assists and does not cure. It is only an accessory. The patient's own protective forces cure the disease, with the aid of the rest and collapse of the lung. For this reason, even in the most favorable cases, the patient must be managed during the first six months as if he had not been given pneumothorax, namely, be at bed rest. This plan is followed to increase his immunity and resistance to the disease. If the tuberculosis has progressed to such an extent that it requires pneumothorax, then bed rest for six months is the only logical and safe procedure. Advanced cases naturally require more prolonged bed rest.

The question of bathing during the first year is important. Ordinarily the exertion of taking one's own bath, in pulmonary tuberculosis, is equivalent to walking four blocks. Also, it brings muscles into play which should be used as little as possible. The patient should be allowed bathroom privileges only. Going to the physician's office for gas fillings entails too much exertion and is contra-indicated, generally speaking, for a year's time, to avoid exertion immediately following pneumothorax. Instituting pneumothorax and allowing the patient to resume his usual vocation in a few months is a dangerous policy.

The patient can be allowed sitting-up exercise after six months have elapsed, if the sputum is at a minimum, the temperature is normal, the weight is favorable, and there is general satisfactory physical condition.

This is gradually increased to ten hours daily, dressing each day and allowing such things as riding in a car. The walking exercise is limited to one block daily for two years.

The average case should have the lung collapsed for at least two years' duration. Naturally, cases with considerable cavitation require longer periods. If the above regime of rest has been followed for two years, one can confidently expect the collapsed lung to have been healed sufficiently to resume its function again. At this time the patient is started on walking exercise, gradually increasing to three miles daily while his tolerance is carefully watched. Then, if his condition is satisfactory, the gas fillings are discontinued. The expansion of the lung is observed with the stethoscope and fluoroscope. When the lung is somewhat expanded an x-ray photograph will give some aid in determining whether or not it is healed and ready to undertake its normal function.

Prenectomy is advised by some clinicians when the lung is being re-expanded, to safeguard the patient from a recurrence of the disease. It is doubtful if this procedure is necessary if the above regime has been faithfully carried out. One cannot expect a collapsed lung to heal unless a favorable regime, such as outlined, is followed. It is surprising how a partially involved opposite lung will improve, although it is performing double duty, after compressing the lung most diseased.

For a number of years we were interested in just why pneumothorax patients frequently developed disease in the contra-lateral lung. A careful analysis of these cases has revealed, in practically every instance, that they were trying to live a normal life too soon after their symptoms were relieved, not waiting until their clinical cure could reasonably be expected.

In conclusion, we know that tuberculosis is a general disease with local manifestations. Therefore, it is imperative we constantly bear this fact in mind in managing pneumothorax, to effect a real healing of the disease and not merely a pseudo cure by mechanical means.

## TUBERCULOSIS OF THE BOWEL FROM THE STANDPOINT OF THE ROENTGENOLOGIST

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(Read before the thirty-ninth annual meeting of the Arizona State Medical Association, held at Phoenix, Arizona, April 24 to 26, 1930.)

The deciding factor in determining the recovery or death of a large percentage of cases of pulmonary tuberculosis is the presence or absence of complications. Of all the complications of pulmonary tuberculosis, tuberculous ulceration of the bowel is, without doubt, the most important in frequency and in gravity.

To enter into anything like a full discussion of tuberculosis of the bowel would require very much more time than is available on this occasion. Only the most salient features of the condition, therefore, will be presented. Special attention will be devoted to the x-ray findings and x-ray diagnosis.

Historically, the association of bowel disturbances with pulmonary tuberculosis has been noted since the dawn of medical science. Authorities are generally agreed that about eighty per cent of the cases of far advanced pulmonary tuberculosis have associated tuberculous ulceration of the bowel.

The site of predilection is, in the great majority of cases, the ileocecal region. The presence of tuberculous ulceration in any other part of the bowel tract, in the absence of ileocecal involvement, is rare. The reasons for this tendency to involve the ileocecal region are anatomic and physiological.

It will be recalled that food and, with it, tubercle bacilli pass through the duodenum and jejunum with great rapidity but upon reaching the distal portion of the ileum, the bowel content there accumulates, held back by the ileocecal valve. From this point the bowel contents gradually fill up the cecum and well up into the ascending colon. So just at this part of the gastro-intestinal tract, where bowel contents are kept in contact with the mucous membranes for the longest interval, we find the site of predilection for tuberculous involvement.

From the ileocecal region the ulceration may extend in both directions: proximally, to a point high in the jejunum; distally, into ascending and transverse colon. Extension beyond the splenic flexure is rather unusual. Tuberculosis is not frequently found in descending colon, sigmoid or rectum.

### PATHOLOGY

Tuberculosis of the bowel may be represented by infiltration, by ulceration or by fibrosis.

The form with which we have to deal in a very large proportion of our cases is ulceration, though an example of fibrosis will be shown you today, the result of healed tuberculous ulceration.

Extensive infiltration of the bowel wall causes encroachment on the lumen of the gut, producing the true "filling defect" of the roentgenologist and resembling the filling defect of malignant disease. This form of pathology is, however, decidedly rare.

### SYMPTOMATOLOGY

The symptoms of tuberculosis of the bowel are numerous, variable and uncertain. The well known disturbances of the gastro-intestinal tract which occur in such a large proportion of our cases of pulmonary tuberculosis in which there is no ulceration of the bowel, so closely simulate the symptoms found in the presence of ulceration that their differentiation is, in many instances, very difficult or, indeed, impossible. Another confusing factor is the practical absence in certain cases of abdominal symptoms in the presence of tuberculous ulceration, even where ulceration is extensive. In most cases of tuberculous ulceration we may expect to find abdominal discomfort varying greatly in degree, though pain that is really severe is rather unusual. The pain is usually colicky in character and recurrent. A fairly constant symptom, and one having some value, is a persistent tendency to gaseous distention. Loss of weight is almost certain to occur. Loss of appetite is very frequent. Tenderness over the abdomen, either general or more frequently over right lower quadrant, is common. A symptom which should be given attention is the development of excessive nervousness and insomnia. Diarrhea is frequently present. There may be alternating diarrhea and constipation, or, strange to say, there may be no definite abdominal symptoms, regardless of the extent of ulceration. On the other hand, any or all of the symptoms enumerated may be present in the absence of tuberculous bowel involvement.

### DIFFERENTIAL DIAGNOSIS

Tuberculosis of the bowel must be differentiated from the indigestions and diarrheas of the tubercular patient, from non-tuberculous colitis, from appendicitis.

We will readily agree that early and definite diagnosis in tuberculosis of the bowel is of extreme importance. Tuberculosis of the bowel is a curable condition under favorable circumstances. The degree of curability depends principally on early diagnosis and prompt institution of appropriate treatment.



How, then, shall we, in view of the extreme variability and uncertainty of the symptomatology, arrive at a definite early diagnosis? This question brings us to our proper subject for this paper—diagnosis by x-ray.

By x-ray, the diagnostic problems of tuberculosis of the bowel have been greatly clarified. The cloud of uncertainty and doubt has been swept away and the diagnosis of tuberculosis of the bowel may be made with a degree of certainty and accuracy fairly comparable with that of tuberculosis of the lungs.

Pioneer work along this line was done by Stierlin, Archibald, Pirie and others. This work received little general attention until taken up by Brown and Sampson at Saranac. To these men we owe much. A technic was developed and a knowledge of the value of the x-ray in the early and accurate diagnosis of this condition disseminated through the medical profession.

I wish to point out to you, in the simplest possible way, the technic of this diagnostic procedure and the principles underlying this method of diagnosis.

Gastro-intestinal diagnosis is not easy. The x-ray diagnosis of tuberculosis of the bowel, however, is relatively easy, relatively simple and as accurate as that of any other gastro-intestinal condition. Tuberculosis, as has been pointed out, has a strong predilection for a limited part of the intestinal tract. An ulcerated area is an irritated area. Irritation of the bowel, usually localized in tuberculosis, causes localized hypermotility and spasm with a strong tendency to expulsion of the barium meal from that portion of the intestine. In a word, the diagnosis of tuberculosis of the bowel is dependent on a localized intolerance of the bowel to the retention of its contents.

The differential diagnosis between tuberculous and non-tuberculous colitis, will, in certain instances, cause some difficulty.

However, the differentiation can usually be made. Tuberculous ulceration, as formerly stated, involves, in most cases, the distal small bowel and the proximal large bowel. Non-tuberculous ulceration is more likely to involve the more distal part of the large bowel or to show a much more generalized hypermotility. There is a lack of that localization usually seen in tuberculous involvement.

One must, of course, bear in mind the possibility that both tuberculous and non-tuberculous colitis may exist in the same patient. This probability is, however, rather remote.

Our routine examination for tuberculosis of the bowel are conducted as follows: The patient is given a rather light, easily digested supper. At 3 a. m. he is given four ounces of barium sulphate in buttermilk, sweet milk or malted milk. He is given no breakfast. Six hours later he reports to the laboratory. Radiographs are made, usually at six, six and one-half and seven hours. At eight hours he is given a second barium meal and two or more radiographs are made, at ten minute intervals. The patient is then allowed to eat as usual. He returns to the laboratory twenty-four hours after the second barium meal, for final radiograph.

The two-meal system is used as a matter of convenience, bringing all the work easily within usual working hours. The patient misses one meal, breakfast. No purgatives are permitted before or during the series. The same prohibition applies to any drug which would modify the action of the gastro-intestinal tract.

We wish to study the action of the bowel, "as is," and not as modified by any drug. For the same reason, little use is made of the barium enema. The enema, of itself, causes distention and irritation with hypermotility. As said before, the desire is to study the bowel unaffected by anything other than food with barium.

#### SUMMARY

Tuberculosis of the bowel is the most frequent and grave complication of pulmonary tuberculosis. The recovery of the patient will, in many instances, depend on the early diagnosis and prompt treatment of this complication.

The x-ray offers a means of early and positive diagnosis, exceeding in value any and all other means at our command. The method works little hardship on the patient.

**PHYSICAL THERAPEUTIC TECHNIC;** By Frank Butler Granger, M. D., Late Physician-in-Chief, Department of Physical Therapeutics, Boston City Hospital; Director of Physiotherapy, United States Army Medical Counselor, United States Veterans Bureau; Member of Council on Physical Therapy, American Medical Association; Instructor of Physical Therapy, Tufts Medical School; with a Foreword by William McFee, M. D., Boston, Mass., Octavo volume of 417 pages with 135 illustrations; Philadelphia and London: W. B. Saunders Company; 1929; \$6.50 net.

This book is prepared as a guide for the beginner in physical therapy. He discusses the physiological effects produced by electricity, the galvanic current, ionization, reaction of degeneration, sinusoidal current, static electricity, high frequency currents, diathermy, hydrotherapy, massage, use of carbon dioxide snow, etc. There are 35 illustrations of the various treatments. There are 417 pages with a good index. Those who are interested in physical therapy will find this a valuable book.

# **VOLKMANN'S ISCHEMIC CONTRACTURE: Presentation of case with moving pictures**

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(Read before the thirty-ninth annual meeting of The Arizona State Medical Association, held at Phoenix, Arizona, April 24 to 26, 1930.)

In bringing the subject of Volkmann's ischemic contracture before you, I am well aware of the fact that I shall have nothing new to offer. However, it is a condition which is of particular interest to everyone who handles fractures; first, because of the vicious complications that one may have following injuries or fractures near the elbow joint or forearm, and again because of different opinions advanced by the authorities, both as to pathology and etiology.

The picture this complication or deformity presents is: Flexion or contraction of the wrist and fingers, hyperextension of the first phalanges on the metacarpal bones, adduction of the thumb, pronation of the hand, slight flexion of the forearm, and loss of power of the muscles of the forearm.

Some say it is not uncommon. Possibly there are many cases that are not reported. However, in the forty years following Volkmann's original report, there were only one hundred three cases on record. In the Mayo clinic, according to Doctor Meyerding's recent article, there were one hundred twenty-eight cases seen there from 1910 to 1927.

As to the pathology. The majority of our authorities agree that primarily the muscles alone are affected and that whatever nerve change takes place is due to pressure caused by the resulting scar of the affected part. Primarily, then, due to interference with circulation both venous and arterial, myositis and necrosis develop in the muscles of the forearm, followed by subsequent fibrosis, which reaches its maximum in two or three months, causing a contracted, cord-like, atrophic condition of the muscles of the forearm. However, those who argue that there is primarily nerve injury along with the muscle necrosis point out that the condition cannot be produced experimentally by injury to the vessels alone but can be produced only when the nerves also are injured.

The etiology presents but one factor that all writers agree on, and that is that the interference of the circulation is caused by pressure, but whether it is intrinsic, extrinsic, or a combination of both, is the topic upon which opinions differ. Intrinsic pressure is produced by hematoma and displaced fracture fragments. Extrinsic pressure is from

tight splints, casts, bandages or forced position. Some of our quite recent writers felt it was the result of poor treatment or negligence in the application of too tight casts, splints, or bandages. However, many cases are reported where no such treatment was used. One writer reports a series of twenty-eight cases of Volkmann's contracture, practically all following supracondylar fracture in which there was non-reduction of the lower fragment, with the proximal fragment forced down into the antecubital fossa; and he lays great stress on this as a causative factor. True, it is no doubt a factor and especially where the forearm is flexed on the non-reduced fragment. But again, it occurs where there is no displacement of fracture fragments, regardless of where the fracture is located, and even in injuries not associated with fracture. The intrinsic pressure produced by the hematoma is stressed as the main factor by Doctor Marble. It has been shown that this alone is sufficient to produce the condition. Cases are on record where there were no displaced fragments causing pressure and where no form of splinting, casts, bandages or forced position were used and still Volkmann's contracture developed. Having this factor present, anything that will cause additional pressure is merely adding insult to injury and increasing the possibility of the complication.

The onset is rapid, the patient suffering severe pain, with marked swelling and numbness. The inflammation of the muscles reaches its maximum in about twenty-four hours, after which the contracture follows.

As to the treatment recommended, it depends upon the stage of the contracture. When diagnosed within a few hours, prompt incision with application of warm, moist dressings to relieve the intrinsic pressure caused by the hematoma. When seen after days or weeks have elapsed, some form of gradual extension followed by heat and massage. A good method of applying this extension is by means of the banjo splint. The method of putting on a banjo splint is as follows: First, wrap a layer of felt around the forearm and hand, cutting down to perfect fit and sewing up the back. Then start the plaster and embed a No. 8 steel wire with loop, bending the wire as you put it on. Extension of the fingers can be made in one of three ways: Adhesive plaster applied to the fingers; drilling a hole through the fingernail to anchor the elastic band; or by passing a straight needle laterally through the distal phalanx. A needle similar to Keith's straight abdominal needle is a



good one to use. Elastic bands are then attached to one of the three types and fastened to the wire loop. The cases in which the deformity is of months' and years' duration, require surgery. The longer the deformity has existed, the less are the possibilities of restoring function. The deformity can be corrected or improved, but in cases of years' standing with muscle atrophy and changes in bones, vessels and nerves, very little if any function is restored.

A study of this subject brings out several interesting facts, not as to care and treatment of this deformity, but facts that will help us to prevent it. Doctor Ely, in his report of twenty-eight cases of Volkmann's, stated that every case followed supracondylar fracture. Doctor Meyerding, in his recent paper, reported the majority as having a history of supracondylar fracture. In every case of supracondylar fracture with displacement, you have the intrinsic pressure present, you have the displaced fracture fragment, and the principal factor is hematoma. The majority of the cases of supracondylar fracture with displacement, when seen early, do not have marked swelling and tension of the tissues about the antecubital fossa. However, many are seen that have great swelling. In these cases, even though perfect reduction is made and the pressure from the displaced fragment is eliminated, it is necessary to place the forearm in acute flexion in order to hold the reduction. This aggravates the pressure already present due to the hematoma and it becomes a possible contracture case. Doctor Marble and others advise early incision in these cases, washing out the hematoma, reduction of the fracture, and the placing of internal fixation of absorbable material, such as heavy chromic gut or kangaroo tendon. This procedure of incision holds true for all injuries about the elbow joint or forearm with marked swelling from hemorrhage. All of these cases should, of course, first be examined for possible nerve injury which may be a complicating feature.

The case I have to present with motion pictures is of a Mexican girl ten years old. She fell down some steps at school during the first week of September, 1929. There being no father, the mother did not take her to a doctor because of financial reasons. She had no medical attention from early September until October 30, 1929. The mother, on being questioned, stated that she bathed the arm and hand in warm salt water each day and made a sling in which to carry the arm. The girl returned to school after one week, but, for some unknown reason,

the teacher or school nurse did not observe the deformity until the truant officer noticed her on the school grounds and brought her to the hospital. At that time she had a typical deformity, as you will see. The x-ray pictures showed fractures of the head of the radius and olecranon process of the ulna, with very little displacement. She was interned in the hospital and on the following day an attempt was made to place the hand and forearm in a banjo splint with finger extension. Because of the contracture it was impossible to hold the hand in a cock-up position without exerting a great deal of pressure on the tissues in forcing the wrist in extension while the cast was setting. This pressure interfered with circulation and the cast was immediately removed and another one put on, this time leaving the hand and arm in a straight position. A straight Keith's abdominal needle was placed through the distal phalanx of every finger and thumb and elastic band traction hooked to the needle on both sides of the finger and attached to the wire loop of the banjo splint, exerting constant traction. A small moist dressing of S. T. 37 was wrapped around the end of the finger at the needle perforation. This splint was left for two weeks, when pressure of the cast between the index finger and thumb was noticed and the cast was removed. A new one was put on immediately, with the hand in a cock-up position, and the traction reestablished. This was left on for a little better than two months, when it was removed and physiotherapy started. The child is still getting daily treatment of heat, massage, and exercise. I feel that, for the length of time, the result is very satisfactory and hope that, in the course of a few months, the forearm will greatly improve.

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**SURGICAL DIAGNOSIS:** By 42 American Authors. Edited by Evarts A. Graham, M.D., Professor of Surgery, Washington University Medical School. Three Octavo Volumes, totaling 2750 pages, containing 1250 illustrations, and Separate Index Volume. Philadelphia and London: W. B. Saunders Company, 1930; Cloth \$35.00 a set.

These encyclopedic volumes on surgical diagnosis would seem to be as useful and essential to a surgeon as the dictionary is to a man doing literary work. There is just about as much chance to review these volumes as there would be to review the dictionary.

The printer's art is beautifully presented.

The list of contributors is guarantee of the reliability of the text.

Dr. Graham stresses the point that because of the laity's extreme confidence in, and awe of, the accomplishments of surgery, there is a needless amount of surgery. He hopes that these volumes will help to stimulate the entire profession to go carefully into the indications for and against operations before recommending them.

## FEVER

HARRY A. REESE, M. D.  
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(Read before the thirty-ninth annual meeting of the Arizona State Medical Association, held at Phoenix, Arizona, April 24 to 26, 1930).

Sacred history tells us that "Peter's wife's mother was sick of a fever." But several thousand years before Peter's time, we read in Leviticus of a "burning ague," and in Deuteronomy of a "fever." So fever has been recognized as a disease or a symptom of disease since history began. The importance of fever in diagnosis and prognosis of disease is evidenced by the fact that every physician carries his clinical thermometer.

Fever is defined as: "A pathological rise of temperature." With the different types of fever—continued, remittent, intermittent, and recurrent—we are not especially interested.

We classify animals as warm-blooded, homiothermic, and as cold-blooded, poikilothermic. Man is homiothermic. Man's normal temperature is said to be 98.6 F., but considerable variation occurs, both in different parts of the body and at different times of the day. The temperature is coldest in the skin and warmest in the liver.

The thermotactic center, or the center which regulates heat, is claimed by Samuel Foman to be situated in the medulla, and is made up of two divisions: first, thermogenetic (producing heat); and second, thermolytic (eliminating heat). Bodily heat is produced by oxidation of food, muscular activity, glandular activity, friction of blood in blood vessels, and voluntary addition of heat, ingestion of hot foods, and warm applications. Bodily heat is eliminated by vascular dilatation, radiation and conduction, by sweating, by the excretions through the urine and the lungs, and by the voluntary addition of cold. The temperature of the body is determined by the relation which exists between the amount of heat produced and the amount of heat eliminated. The delicate adjustment which exists in the body between heat production and heat elimination is under the control of the central nervous system.

Fever is usually due to increased heat production rather than to lessened heat loss, especially in the infectious diseases. During a chill there is the rapid increase in temperature owing to the muscular contractions during the rigor. Chill is often met with in malaria, in sepsis, in endocarditis, and in the beginning of lobar pneumonia. The patients complain bitterly of cold, their teeth

chatter, and the whole body may shake. The skin is pale and cool (vasoconstriction).

Now that we have considered the physiology of animal heat, and the pathology of fever, and the value of the temperature curve as an aid in diagnosis, it is well that we consider the treatment of fever. Should we treat fever, or treat the cause? You all agree—treat the cause, and remove the cause. But if it is impossible to remove the cause at once—what then? Should we be concerned about high temperature? Liebermeister and his followers say yes. Certainly we should be concerned about it, but what to do is the question.

It is a common experience that patients with high temperatures are more sick than those with low temperatures. This is so, not because the high temperature is itself an unfavorable form of reaction, but because such patients are suffering from more intense infections. Furthermore, as we have seen, in the most unfavorable infections of all the temperature may be too low. The body temperatures of rabbits have been kept at 105.8 F., and over, for weeks at a time without serious damage. The degeneration of the internal organs so often observed in those suffering from infectious processes does not follow such a prolonged overheating of the body. It is the infection and not the hyperthermia which causes the serious damage to the body in infectious processes.

Dr. Albion Werter Hewlett says, in *Monographic Medicine*, that the temperatures encountered in fever are sufficiently high to inhibit the growth of certain bacteria. High temperature not only inhibits the growth of bacteria, but an increased temperature increases the speed with which protective antibodies are formed.

To many of you the question of how to treat fever has been no question at all. You have ordered cold baths. You should have a care lest you do more harm than good. What takes place when you give a cold bath? You abstract heat from the surface of the body and the patient becomes chilled. In a few minutes he begins to shiver and chill. After several minutes of cold sponging you take his rectal temperature, because you don't want his chattering teeth to bite your thermometer in two. You find his temperature a little lower, but not as low as you would like, so you continue to sponge. The poor victim chills and begs. Finally you decide you have done your duty (or rather your nurse decides she has done her duty under your orders,) and the bath is discontinued. Now what follows? Your cold



bath did not remove the infection, nor eliminate the toxins. What follows the chill of malaria? High temperature. During the chill every muscle is in activity, vibrating like a tense wire, contracting as if in contact with an electric current. This muscular action manufactures heat. In a few hours the patient's temperature may reach a higher point than before the bath. And under your orders the cold bath is repeated. What good have you done? None. What harm have you done? Much in every way. During disease the first law of nature, the law of self-preservation, established that high temperature as absolutely necessary for the patient's welfare, and instead of assisting nature in combating disease you have knocked down the defenses of nature, and aided the infecting organisms to gain the supremacy in the battle between life and death.

But, you argue, a cold bath is stimulating. Yes, you are right. You stimulate activity, and activity is exercise, and exercise is work, and work is exhausting. A human body, like a storage battery, has only a limited amount of latent energy. If the cold bath is repeated day after day, there comes a time when poor exhausted nature gives up the fight, and the patient no longer responds to the whip; there is no reaction. The temperature drops below normal, and you flatter yourself that you have done a good piece of work. You tell the patient's friends that you and your nurse contested every foot of ground lost to the enemy, and that you are both so glad that the patient's temperature has reached normal. But in the same breath you warn the friends that the fever (you do not blame your treatment)—that the fever has left the poor sufferer very, very weak, and that he may not survive. You try stimulation and external heat, but you are too late. Your patient gives up the ghost. You should have had a vision of the future before you gave that first cold bath. Had you never given the first cold bath, it would not have been necessary to give the second, and the third, and the fourth. Had you assisted nature instead of destroying her first line trenches you might have been of real service. Under the cold bath treatment, if your patient recovers at all, he does so in spite of your treatment, not on account of it. Even if he does live, think of the long train of ills that may follow, such as acute nephritis, which I knew to follow in at least one case of pneumonia which was treated with ice bags; or pulmonary tuberculosis, which in another case followed ice rubs on a marble slab for typhoid fever.

I do not know how many of you still believe in the ice pack, or the ice rub, or even in the cold bath, but if you do believe in this sort of barbarism, let me say to you now, while I am still conscious, that it is my request that, if I should contract any disease running a high temperature, you let me alone or turn me over to the care of some motherly old woman who has no thermometer, and who has common sense enough to let nature alone or to give me warm or tepid baths, which will do no harm if not too frequently repeated, and may do much good by inducing quiet and rest, and assist nature in a very material way by increasing perspiration, and thus eliminating the toxins of the infection.

How then shall we treat fever? Don't treat it. Treat the cause. Destroy the infection if you can. Eliminate the toxins. Husband the strength of your patient. And keep in mind that nearly all acute infectious diseases run their course in a few days. If we can not shorten this period, we can, at least, modify the severity of the attack. And this we can do by isolating the patient, excluding all visitors except the physician and the required number of nurses and attendants, by insisting upon quiet and rest, by gentle elimination, and by proper diet.

Have antipyretic drugs no place in the treatment of fever? This is a moot question. If such drugs promote elimination and quiet and rest, without doing harm, they have a place in the management of such cases. I have been afraid of the harmful effects of such drugs, and rarely make use of them.

## SOME EPIDEMIOLOGICAL STUDIES

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Phoenix, Arizona

(Read by title before the thirty-ninth annual meeting of the Arizona State Medical Association, held at Phoenix, Arizona, April 24 to 26, 1930.)

The heading of this paper is somewhat vague or indefinite, but my intention is to take up from an epidemiological standpoint some of the methods and means of controlling communicable disease in Arizona. Epidemiology is usually divided into statistical, or historical, epidemiology and field, or practical, epidemiology. The distinction is perhaps useful but the dividing line is not sharp, each depending much on the other.

The basis for all epidemiological investigation is diagnosis. The more certain diagnoses are made, the greater are the chances of reaching a correct conclusion.

Diagnosis is also the foundation upon

which the classification of diseases for statistical purposes is based. As the education of physicians and diagnostic methods improve, the resulting statistics become more reliable.

Statistical study of disease is rapidly becoming a very important factor in the control of communicable disease, and many of the highly organized central public health offices are enlarging this division so that on very short notice data on any disease in the state can be furnished. With the assistance of a skilful statistician the study of epidemic disease can be greatly aided. I have been told that this statistical study has been so highly developed in some states that predictions, with fair accuracy, can be made by epidemiologists. It seems almost uncanny to say that, in a certain locality, during a certain week, we will have a certain number of cases of typhoid and that a certain number of these cases will die, etcetera, but this can be deduced if we only have reliable reporting.

During the last year reporting by physicians in this state has improved wonderfully. But we must make it still better. I find that a great many doctors do not report suspicious or doubtful cases to their county units. Early reporting is very often the means of aborting an epidemic. I feel confident that at this time we have around 2000 cases of milk smallpox in this state and yet last week's reports to the office show only twenty-one cases. Naturally, there must be a great number of these cases wandering around without control. There is one bright feature to milk smallpox—it spreads vaccination to a large number of people who have opposed or neglected to protect themselves.

Field epidemiology should not be undertaken without the aid of well equipped laboratory facilities. This state is fortunate in this respect. Our laboratory is able to care for almost any kind of bacteriological examinations and furnish rapid, accurate determinations. You men who are located at a distance from regular laboratories should remember we are always ready to help you clear up your diagnoses of communicable diseases.

I was very fortunate in having an opportunity last month to visit several states where public health work is organized to the highest degree. A study of their different organizations was very interesting and some of their deductions and methods appear almost revolutionary to us in this state.

We are still working under regulations and laws passed years ago, when Arizona was a small frontier state. The rapid devel-

opment with all its prosperity has given us many problems to solve and some of them are peculiar to this section of the country.

We have a meningitis are a where this disease exists practically through the year. These epidemic spots exist in many states and are somewhat hard to explain. For instance, Miami and Globe are only five miles apart, the residents of these two towns visit and intermingle daily; yet Globe has had only two cases of meningitis this year, while Miami reports twenty-three.

Typhoid fever is prevalent in this state but has never reached epidemic proportions except on one or two occasions when practically all of the cases were confined to small localities. Our greatest menace in typhoid fever is due to uncontrolled carriers and to a large number of mild unrecognized and unreported cases. This number will probably always be with us on account of the rapid movement in the state's population. Vaccination for typhoid is the only solution, while sanitation and other general measures help, it is only through a general vaccination campaign that anything like results can be obtained.

Scarlet fever has shown up in epidemic proportions in several spots in this state. If we could, all of us, fix in our minds that scarlet fever is purely an infected throat condition, I believe that our method of recognition and control would be easily handled. There are many cases of scarlet fever which hardly show any eruptive stage. There are other cases that show a marked eruption with slight throat symptoms. We know positively that this disease is spread entirely from the secretions from the nose and throat and that the peeling or desquamation does not carry the organisms of this disease. All epidemiologists are becoming more convinced that the isolation period for scarlet fever is too short. Some countries—Germany, for instance—have increased the control period to forty days. I believe that not all cases of scarlet fever run the same course. We will have certain mild forms which clear up rapidly and others remain infectious for long periods of time; and until we become better acquainted with the causative organism of this disease, we are, therefore compelled to fix an isolation period which will cover the mild and severe types.

There occurs during the spring and early summer months, in certain valleys of this state, a diarrhea and dysentery problem. This condition in some localities reaches epidemic proportions and a systematic exhaustive study must be made and efforts started towards a remedy or control of the situation.



All physicians are earnestly requested to report as early as possible all cases resembling dysentery during this period, for we must have their assistance in this work.

I find that laboratory facilities are well developed in the southern and central parts of the state and are available to surrounding towns, but our northern tier of counties, being sparsely settled, do not have the opportunity of quick confirmation of the diagnosis of communicable diseases. This condition is being studied and efforts will be made to arrange some relief for this section of our state.

We have with us a constant reporting of mad-dog bites throughout the state. Rabid animals will be found every now and then along highways where tourists and travelers lose their dogs or desert them, and these animals, running without food or control, are easy victims to acquire hydrophobia. The State Board of Health is able to furnish prophylactic treatment for hydrophobia at a very reasonable rate, provided that this treatment is given to indigents only. In one of our neighboring states the prevalence of rabid animals became such a menace a few years ago that special legislation was passed to eliminate the homeless dog. This measure was carried out energetically and at present I note very few cases being reported from there. It may be that in this state, if this menace increases, the State Board will have to make some provision similar to New Mexico's.

I do not wish to close this paper without calling attention to the increase of venereal disease prevalent in many parts of the United States, and noting that the Federal Government is beginning to agitate educational and control methods. It is, indeed, unfortunate that their appropriation for carrying on V.D. clinics was stopped several years ago. This is a problem that acutely follows the bright spots of prosperous parts of the country. Arizona today is attracting people from every part of the country. This means that it will be another factor for us to control in the near future.

Research work is gradually clearing up many mysteries. There is a growing tendency to believe that the high contagious stage of some diseases is at the outset, or first few days. This feature explains, in a way, a seeming lack of control and emphasizes the necessity of early reporting, for instance, measles and smallpox, both of which are highly contagious before the eruptive stage. It has been proven that the desquamation of several diseases does not spread the contagion—measles and scarlet fever.

We are more impressed every day with the fact that all communicable diseases are spread by intimate contact with the sick. If we could completely isolate every contagious case early, we would come much nearer reaching an ideal control than by absolute, modified and various other forms of quarantine. Quarantine at its best is only a temporary measure depending entirely upon the support of the people and vigilance of the law enforcing bodies. It has often been said that people who respect quarantine don't need it and those that do not respect it will disobey the regulations in spite of all police control.

There seems to be in this country a growing tendency toward disrespect for all kinds of law enforcement and public health laws are no exception to this rule. Our court dockets are crowded and enforcement officers are working overtime to enforce law and order. Naturally the vigilance of minor offenses is neglected. This brings us back to the subject of ideal control of communicable disease, that is, diseases which we can protect by vaccination. It is one of the greatest reasons why we should insist on protective vaccines.

Our better knowledge of epidemiology has compelled great changes in our control work. Fumigation is almost a relic of the past. Great expense has been saved city governments by this measure. You would be surprised to know how much fumigation costs in large cities like New York and Chicago; sums of money which would actually support organized health departments.

Ever since the World war there has been great unrest throughout the whole world. This is an age of rapid movement and easy transportation. There is a continual movement of people from one section of the country to another, changing residence several times a year. With this increase in travel, disease is spreading in such a way that state control is becoming very difficult. Better relationship between neighboring state departments of health must be encouraged and more cooperative efforts made to meet these problems.

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## GOITER

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(Discussion before the thirty-ninth annual meeting of the Arizona State Medical Association, held April 24 to 26, 1930.)

A solution of the problem of the etiology of goiter must be found before thyroid pathology can be perfectly understood. Unfortunately, there has not been brought to light the etiological factor of thyrotoxicosis. The

literature has been voluminous from surgeon, clinician and laboratorian and still they all appear to be theorizing; and when we theorize concerning any given material entity, we know little. I was amazed, though, in reviewing some of the literature of goiter, at the tremendous amount which has been written and at times I was much confused. One factor rather encouraging to note is that there is a definite trend toward uniformity of nomenclature. Hyperplastic toxic goiter seems to be slowly, but surely, replacing the erroneous exophthalmic goiter. Toxic adenoma seems to be a good term and is widely used. Crile suggests that, possibly, a better name than hyperthyroidism is "hyperkineticism"—in his ever far-seeing way emphasizing the adrenal factor in hyperthyroidism. He believes there is an intimate hook-up between the thyroid, the adrenal and the nervous system. Crile has reported ten cases upon whom he has performed a unilateral adrenalectomy for hyperthyroidism and reports the immediate clinical results as comparable with those produced by a unilateral thyroidectomy, but with the advantage that the patients had less post-operative hyperthyroidism.

Warthin states that our conception of hyperthyroidism has become an enlarged clinical syndrome to which innumerable symptoms are daily added until it has become impossible to distinguish what some writers regard as hyperplastic toxic goiter and what others call toxic adenoma: and the pathologist encounters great difficulties if he attempts to apply the histological criteria, commonly used for the diagnosis of hyperplastic toxic goiter, hyperthyroidism or toxic adenoma.

Reports from Mayo Clinic tell us that the toxic goiter case is having his surgery done earlier. The average duration in 1917 was 19 months; in 1927, 14 months, before surgery was resorted to. Riesman, in his usual customary shrewd and truthful way, says that in diagnosis of simple goiter the salient point in many instances is to recognize its non-importance rather than its importance. This, I think, is very well taken. From the human standpoint, the importance of correct diagnosis in simple goiter lies in the fact that we can assure the anxious mother of the harmlessness of the trouble and the needlessness of surgical treatment, unless the non-toxic goiter attains large proportions through colloid change, or for cosmetic reasons or because of pressure symptoms. Then surgical interference may be required. In contrast to the classification of the types of goiters given by Dr. Tiffin:

1. Colloid Goiter
2. Adenoma, without hyperthyroidism
3. Adenoma, with hyperthyroidism
4. Exophthalmic goiter
5. Cretinism
6. Myxedema
7. Malignancy
8. Anomalies

I should like to read Riesman's classification which he ventures as a purely clinical classification:

Simple Goiter—

Adolescent  
Endemic  
Sporadic  
Adenomatous  
Colloid

Toxic Goiter—

Adenomatous  
Hyperplastic or Exophthalmic

Granulomatous Goiter—

Syphilis  
Tuberculosis

Malignant Goiter

Thyroiditis

Hypothyroidism of mild type without myxedema

Myxedema

Cretinism

The point made by Dr. Tiffin, that the medical treatment consists in: first, prevention; second, pre-operative treatment; and, third, post-operative treatment, is well taken. He tells us the patients should have this thoroughly placed in their minds, for the same etiological factors exist after operation that existed before operation. He emphasizes the fact that we must not permit the patient to consider the operation the final word on the subject, that patients and their friends should be carefully taught that they will be under the observance of the physician for years after the operation. Those of us away from medical centers and the privilege of follow-up work, are so prone to dismiss the case after the operation and have no more of it, which is not good work and surely not fair to our patients or to the pride of our profession.

In discussing the diagnosis of toxic goiter (adenomatous and exophthalmic) Riesman states that the cardinal symptoms, as they are called, are not always present in their totality. The goiter may be small, or it may be retrosternal and not visible. The eye signs are often not marked in toxic adenoma. Moreover, tremors and nervous erythema are found in various forms of neurasthenia. The effort syndrome may closely resemble toxic goiter. Another not infrequent mistake is to interpret early tuberculosis as



exophthalmic goiter. The eyeballs are sometimes very prominent in chronic glomerular nephritis, and might cause the latter to be mistaken for toxic goiter. The surest way to arrive at a correct diagnosis is by means of the basal metabolic rate, which in toxic goiter is practically always raised considerably above the normal.

Riesman does not commit himself definitely with regard to the unity or duality of toxic adenoma and exophthalmic goiter, but does point out that they do not differ to a greater degree than cases of exophthalmic goiter differ among themselves. Clinically certain interesting differences may be noted. Toxic adenoma usually develops after the fortieth year; exophthalmic goiter is more often a disease of earlier life. Muller's experience in regard to the relation of toxic adenoma to certain cases of cardiac decompensation agrees with that of Riesman. A toxic adenoma, even if small, can produce marked cardiac symptoms: auricular fibrillation, paroxysmal tachycardia, and even congestive heart failure; therefore, in every case of decompensation in which the usual causes are not in evidence, if there is rapid heart action and some exophthalmos, adenomatous nodules should be looked for and a basal metabolism test made. Exophthalmos is less marked in adenoma than in exophthalmic goiter. Hypertension, which may occur in any form of hyperthyroidism, is probably more frequent in toxic adenoma than in exophthalmic goiter. While hypertension may accompany goiter, there is a condition in which hypertension is the outstanding or dominant feature, certain thyrotoxic phenomena being added secondarily. The patients to whom Riesman refers are women at or past the menopause, without goiter, without definite exophthalmos, but suffering from tachycardia, at times from auricular fibrillation, and from tremor, vertigo and nervousness. The rise of blood-pressure, unlike that of exophthalmic goiter, affects both the systolic and the diastolic pressure. In these patients the syndrome has been of slow process, terminating either by cardiac decompensation or by apoplexy. He states that basal metabolic studies are needed in this form of hypertension with thyrotoxic feature. Another point which he mentions as of considerable importance in any distinction between toxic adenoma and exophthalmic goiter, is the effect of iodine medication. Iodine usually improves cases of exophthalmic goiter; it often makes toxic adenomas a great deal worse, and is even capable of whipping a nontoxic adenoma up to the point of toxicity.

Struthers tells us the cause of goiter is unknown and therefore we have no specific treatment. He thinks simple endemic goiter, as of adolescence and pregnancy, could be treated medically. Colloid goiters may be cured by iodine or thyroxin, or if they become insistent or show pressure symptoms, should become surgical. The use of iodine in the treatment of toxic goiter occupies a conspicuous place in the last year's literature. Collier and Potter closely followed the basal metabolic rates of 128 cases of hyperplastic goiter and fifty of toxic adenoma and found that in 11.7 per cent of the former hyperplastic toxic goiter there was no drop in the basal metabolic rate, while in the latter forty-six per cent of the cases did show a decline in the basal metabolism under uniform iodine administration. Their conclusions were that one cannot prophesy what the reaction to iodine will be in adenomas but they recommended its use in all cases of toxic goiter pre-operatively. Jackson feels that, if iodine has not proved beneficial in cases of hyperplastic toxic goiter, there has been an error in diagnosis or in its use. He says that the reaction of toxic goiter adenoma is variable, with some being made decidedly worse by iodine. He warns against the use of iodine in non-toxic cases, calling attention to the fact that several hundred cases of so-called iodine hyperthyroidism have been reported in the literature, including three fatal cases which he saw. Iodine should not be used indiscriminately, either in large amounts or over long periods of time, by persons with adenomatous goiters. He gives his patients large doses pre-operatively—up to sixty minims daily—increasing it to twice that amount the day of, and the day following, operation.

Rose is of the opinion that medical treatment is inferior to surgery and irradiation, but states that medical supervision in association with surgery or irradiation therapy is of the greatest importance. Radiotherapy can be used in mild cases or in the patients who are poor surgical risks, with the idea of operation later if advisable. In the adenomatous goiter, cases of hyperthyroidism with visceral complications and those cases which have not responded to radio therapy, he advocates surgical treatment. The disadvantages of surgery are the immediate mortality and the occurrence of post-operative accidents and complications. Long-continued hyperthyroidism should be avoided, as the time element is now the most influential factor in the mortality rate; the casualties are practically

confined to those in whom the disease has existed for a year or longer.

Dr. Tiffin tells us the adenomatous goiter is commonly causing trouble years before it is so recognized—it is a condition with which the patient is born; that it commonly becomes pronounced at puberty; that it should be treated medically during the adolescent years, and surgery is advocated after adult life is reached in all cases when there is any pronounced adenomatous tissue remaining. Certainly these ideas are logical and it is advice worth keeping in mind in thyroid work. I was surprised also with the point he made that exophthalmic goiter has as one of its causes, hypothyroidism, and, in the organism's desire to compensate, the hyperplasia of exophthalmic goiter develops. Thus, these cases, when seen early, will show a minus basal metabolic rate, and it is in these early cases that medical treatment can prevent exophthalmic goiter.

Lahey well describes the crisis of hyperplastic toxic goiter. He recognizes the impending crisis by increasing toxicity of the patient—an increase in pulse rate, increased excitability, lessened emotional control and over-activation. He states that this should be treated as an emergency, just as diabetic coma should be treated as emergency. The actual crisis is usually ushered in with an attack of diarrhea and vomiting, further increase in pulse rate, sweating, restlessness and fever. In treatment of these crises, he gives Lugol's solution in 20 minim doses, fluids, glucose and morphine. These patients should be operated upon after they have recovered from crisis. In favorable cases, the improvement occurs in from twelve to eighteen hours after beginning treatment.

An interesting phase of thyroid pathology which I had not recognized or had impressed upon me before, is that of acute thyroiditis. This is an infrequent condition, but occurs more often than I think most of us realize and is recognized as a clinical entity. Burbohus, in an interesting article published in *Surgery, Gynecology and Obstetrics* last year, reviews sixty-seven cases which he collected in literature during the past ten years. The disease is characterized by: (1) pain over the thyroid; (2) swelling or tumor formation over the thyroid; (3) tenderness over the gland; (4) fever. The mortality is 11.4 per cent. Those cases which do not go on to suppuration are not nearly so dangerous as those that do, because of the occurrence of complications from the extension of the suppuration. If suppuration does occur, prompt incision and drainage is the best treatment, this through a collar incision—the thyroid exposed and the abscess in the gland opened and drained.

ion—the thyroid exposed and the abscess in the gland opened and drained.

Foss, in an article in the *Atlantic Medical Journal*, summarized his views and those of other leading surgeons as to the treatment of goiter. It impressed me and I'll give it to you in the abstract:

1. "The colloid, so-called adolescent goiter of young people, is not a surgical condition, and the treatment of patients with this type of gland had far better be left to the internist.

2. "Adenomas in young patients under the twentieth year may, with safety, be watched, although adenomas persisting after this time should be removed, if only as a prophylactic measure, for many will ultimately be accompanied by hyperthyroidism and a certain percentage will become carcinomatous.

3. "Adenomatous goiters which have already produced toxemia should be removed usually by the operation of bilateral subtotal thyroidectomy. The problem, however, is then far more difficult than it would have been had the operation been performed prior to the development of systemic symptoms.

4. "The hyperplastic, or true exophthalmic, goiter is a case unto itself, as a rule occurring in younger patients and with somewhat different neurological and cardiovascular manifestations than is the case with the toxic adenoma. The problem nevertheless is similar and the treatment ultimately the same. Whether we accept Plummer's hypothesis, that exophthalmic goiter and toxic adenoma are separate and distinct diseases, or are of the opinion that we are confronted merely by "clinical variations of a single morbid state," as claimed by Graham, the treatment does not vary, although its application is along somewhat different lines.

5. "Iodine has a definite place in the prophylactic treatment of adolescent goiter. In the hands of the experienced professional man it is of great value when given immediately before and again after surgical excision of the gland. In the hands of the layman it is proving an uncertain and dangerous agent.

6. "The complexities of the goiter problem make it not only desirable, but quite essential, that the patient come under the observation of a group trained in the handling of this disease, the so-called thyroid clinic, in which the surgeon plays an important role but one of no greater importance than that taken by the cardiologist and the laboratory worker.



## MAIGNANT TUMORS OF THE THYROID, WITH REPORT OF THE CASE

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(Discussion before the thirty-ninth annual meeting of the Arizona State Medical Association, held at Phoenix, Arizona, April 24 to 26, 1930.)

Malignant tumors of the thyroid are divided into two classes: carcinoma—those having their origin in the epiblast, and sarcoma—those having their origin in the mesoblast. The former are much more frequent than the latter. Some well known authorities deny that sarcoma of the thyroid ever occurs in man.

Malignant tumors of the thyroid gland are not so rare as supposed. I have seen three cases during the past month. It is estimated to be between 0.5 and two per cent of their total number, one to five per cent of all goiters operated are malignant. They are more frequent in women than men, two to one. L. B. Wilson states that malignancy of the thyroid occurs in this country once in every 928 autopsies. Eighty to ninety per cent of the cases of malignancy occur in clinically benign tumors that have existed from one to fifteen years. The age of reported cases varies between fifteen and eighty-two years. Wilson believes that many of the cases start as adenoma in the third decade and progress very slowly. Most common in the fourth, fifth and sixth decade. It occurs most frequently in fetal adenoma. Therefore adenoma of the thyroid must be considered a precancerous lesion. The structure function and reaction to physiological and pathological processes make the thyroid gland inherently susceptible to malignant changes.

No one, not even the great masters of the thyroid tumors, can predict that a certain tumor will or will not become malignant. Certain prodromal symptoms are to be looked for. The rapid increase of growth and firmness of a long-standing goiter, the slow continuous growth of a nodular goiter, are suggestive of malignancy. Hemorrhage, causing a sudden enlargement, should make one suspicious. Pain, hoarseness and difficult breathing are late symptoms. Basal metabolism is usually normal but may vary either above or below normal. Most difficult is the differential diagnosis between inflammation and malignancy of the thyroid. The induration and fixation by adhesions occur in both. In the inflammatory process there are usually constitutional signs of infection and the leukocyte count and differential will assist in a diagnosis. When the

two conditions exist at the same time there is no way to make a correct diagnosis.

One of the peculiarities of malignancy of the thyroid is that it frequently produces distant metastases without local signs of malignancy in the thyroid. These cases metastasize through the blood stream. I saw such a case last year, in which there was a general carcinomatosis.

The difficulty of recognizing early malignancy in tumors of the thyroid before or at operation and the difficulty of determining when an apparently benign thyroid tumor is histologically an early malignancy, is the strongest reason for the surgical treatment of goiter. In order to reduce the mortality in thyroid malignancy, practice the removal of the premalignant adenoma in all patients over thirty years of age. The retention of an adenomatous goiter entails a certain risk of malignancy. The surgical treatment of goiter excels any other forms of treatment. The danger in tumors of the thyroid gland is not in surgical treatment, by men thoroughly trained in this branch of surgery, but in allowing the diseased gland to remain.

If operation is to be curative, it must be before the neoplasm has spread outside the capsule. At operation one recognizes the condition by the loss of the cleavage planes, the tissues are adherent and can not be separated. In cases where there is a suspicion of malignancy, frozen tissue sections should be made at the time of operation.

In case of malignancy the entire lobe should be removed and, if discovered in both lobes, then a complete thyroidectomy must be resorted to, leaving only the posterior portion of the capsule in order to protect the recurrent laryngeal and parathyroids. Surgical treatment of the clinically malignant goiter is usually unsuccessful.

When a clinical diagnosis of malignancy can be made, no operation should be attempted, but instead radiation should be used. After operation in which malignancy has been discovered, radiation should be used. Primary tumors are more responsive than metastases to the x-ray.

Every physician should bear in mind the possibility of cancer in every case of tumor of the thyroid. The responsibility of these cases rests with the medical attendant who first sees the case and treats it for months or years and not with the surgeon who sees the case when a diagnosis can be made. Watchful waiting and expectant treatment have no place when there is a possibility of malignancy.

## CASE HISTORY

Mrs. A. Mc. C., age 77.

**Family History:** Father died at advanced age, cause of death unknown. Mother died at advanced age, of tumor. Does not think it was cancer. One brother living, 70 years of age, in good health other than having a hernia. One sister living, 75 years of age and in good health. Several sisters dead; unable to give cause of death. No history of tuberculosis or carcinoma in the family.

**Personal History:** Patient consulted me because of swelling in the neck. She had some difficulty in swallowing. Could not give much information as to the time she first noticed swelling in neck but believes it has been going on for many years. Has been gradually getting larger; has caused no actual discomfort other than some difficulty in swallowing at times. During past three months condition in neck has increased in size rapidly and has caused pain and tenderness. She consulted a physician who made a diagnosis of carcinoma. Patient has had all of the usual diseases of childhood; had influenza two or three times. With the exception of the above she stated she had never been ill up to the time that she had menopause, which occurred at 49. Since that time she has had occasional periods of loss of consciousness of short duration. These attacks probably come on on an average of one or two a year. Has had four children and states that all deliveries were normal. Until recently her appetite has been good. Was constipated, taking laxative daily.

**Physical Examination:** Patient has expression of pain. Neck held rigid. Pupils react to light and accommodation, no mastoid tenderness, no discharge from ears. Teeth were in bad condition. Tongue was furred and dry, tonsils atrophic. There was a marked enlargement of entire side of neck over which the skin was very red. The entire area was indurated, with fluctuation at the right of the middle in the lower portion of the neck and internal to and paralleling the upper third of the sterno-mastoid muscle. The two fluctuation areas did not seem to connect. There was an induration at the left side, of the middle of the neck anterior to the sterno-mastoid muscle. There was extreme tenderness over the entire side of the neck. Thyroid gland could not be outlined on the right side. The indurated area on the left side corresponded to the left lobe of the thyroid. Her heart and lungs were normal for one of her age. Abdominal findings normal. Blood pressure 128/80. White blood count was 11,200; hemoglobin 70 per cent; polys 75 per cent; trans 3 per cent.

**Urine:** color amber; reaction acid; specific gravity 1.015; albumen positive; sugar negative; 5 to 10 pus cells per field; 1 to 3 blood cells per field.

After physical examination, a working diagnosis was made of suppuration of the right lobe of the thyroid and right cervical glands, with a provisional diagnosis of carcinoma, since a diagnosis of carcinoma of the thyroid was made by a good surgeon prior to her coming under my observation. The findings are indicative of an inflammatory process and with a temperature rise of three degrees, which was present at three p.m. at the time of my examination, it was my opinion that the condition was inflammatory and probably complicated by malignancy.

Because of the acute inflammatory process, ether was decided upon as the best anesthetic. A four-inch collar incision was made two finger-breadths above the costal-sternal articulation, through the

skin and platysma. The center of this incision was over the lower fluctuation area. The upper flap was dissected upward. The muscles over the fluctuation area were split longitudinally and the capsule of the right lobe of the thyroid exposed. The line of cleavage between the tissues was obliterated. The capsule of the right lobe of the thyroid was opened and about two ounces of yellow creamy pus was liberated. The right lobe of the thyroid was enlarged, irregular in outline, the anatomical characteristic being destroyed. The lobe was almost free in the capsule. There was a slight attachment at the upper pole. The lobe was lifted out of the capsule, double clamped and cut between clamps. The tissue beyond the proximal clamp was then ligated. There was practically no bleeding. The isthmus and the left lobe of the thyroid were indurated and adherent to the adjacent structure. There was no fluctuation area in either the isthmus or left lobe. A blunt forceps was driven through the depth of the incision and external to the capsule of the thyroid into the fluctuation area paralleling the upper third of the sterno-mastoid muscle. About two ounces of pus was liberated from this cavity. The forceps was opened and withdrawn, enlarging the opening. The right index finger was introduced into the cavity and three or four large cervical glands were found free within this cavity. These were removed. The puncture wound was made into the skin and platysma immediately above the sternal notch. Iodoform gauze was packed in both abscess cavities and a drainage tube was inserted into each cavity and these were brought through the puncture wound. The split muscles were closed with number one plain catgut. The platysma and subcutaneous tissue were brought together with the same material and clips were used to approximate the skin.

The patient left the operating table in good condition and made satisfactory progress. The wound drained very freely. The drainage tubes were removed forty-eight hours after the operation and a portion of the iodoform gauze was also removed at this time. The remaining portion of the gauze was removed two days later. The original wound healed without suppuration. The patient was up on the fifth day and left the hospital on the tenth day with but little drainage from the wound. A culture of the pus removed at operation did not show any growth.

**Pathologist's Report:** Thyroid gland-section shows involvement of the new growth made up of atypical epithelium arranged in irregular gland-like formation, evidently an adeno-carcinoma.

**NOTE:** At the time the patient left the hospital, most of the swelling and a great deal of the induration of the neck had disappeared. X-ray treatment was instituted which consisted of 600 milliamperes-minutes, distributed evenly between the two lobes of the thyroid, partly at 135 kilovolts and partly at 175 kilovolts. Treatment delivered 125 per cent of erythema dose into substance of thyroid.

The prognosis in this case is extremely grave as the malignancy has, no doubt, extended beyond the capsule and into the adjacent structure. This case demonstrates the urgency of early surgical treatment of goiter and difficulties that are encountered in making a differential diagnosis of malignancy.



## REPORT OF A CASE OF MITRAL STENOSIS WITH UNUSUAL CLINICAL MANIFESTATIONS

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(Presented at the Staff Meeting of the El Paso City-County Hospital, for May, 1930).

Mexican, male, age 21, admitted to the hospital January 28, 1930.

**Chief Complaint:** Shortness of breath, cough, swelling of entire body, most pronounced in feet and legs.

The present illness dates from five months previous to admission. At that time patient began to get short of breath, heart palpitated on exertion, and feet and ankles began to swell, developed a cough. Condition gradually became worse until he was confined to bed. Admitted to hospital on a stretcher.

**Past History:** Occupation, laborer; has used alcohol and tobacco in moderation; usual diseases of childhood; no history of venereal infection; no history suggestive of a rheumatic fever; apparently in good health previous to onset of present illness.

**Family History:** Of no consequence.

**Examination:** Well developed, well nourished, adult male, Mexican, acutely ill, coughing and having considerable respiratory distress; pupils unequal and react sluggishly to light; respiration rapid; moist rales throughout both lungs; no evidence of pleural effusion. Some enlargement of the left ventricle; arch of aorta apparently of normal width; no murmurs heard; rate regular, 84; blood pressure 112/82. Evidence of fluid in abdominal cavity. Liver dullness extends three fingers breadth below the costal margin; marked edema of feet and legs, back and lower abdominal wall. Knee jerks absent, reflexes otherwise normal.

**Laboratory Reports:** Urine on admission showed heavy trace of albumin; no casts; 1,028. Later examinations of the urine showed no albumin; urine essentially negative; N. P. N. of blood 23 mgm. Blood Wassermann negative. Sp. fluid negative.

X-ray by Dr. Turner on February 20th showed heart shadow much larger than normal, and rather dense, fibrous infiltration of upper lobe of right lung.

With rest in bed, restriction of fluid, active catharsis and digitalis, patient improved considerably, and on February 27th was transferred to the old men's ward. During his stay on the medical service, he had been free of temperature, respiration from 18 to 24, pulse varying from 80 to 110, on one occasion reaching 124. No irregularity of pulse recorded.

Patient did not do well in the old men's ward, and after twelve days was readmitted to the medical service with a badly decompensating heart. At this time he was cyanotic, short of breath and in great distress. There was marked edema of lower extremities, back and lower abdominal wall, marked ascites, enlarged liver, moist rales throughout bases of both lungs; heart dullness extended to the anterior axillary line and there was a blowing systolic murmur heard best just to the left of the ensiform cartilage. The pulse was regular, small volume and about 98. Blood pressure 108/84.

Patient was given digitalis, ammonium chloride, and salyrgan intravenously together with other measures to relieve the edema. He did not respond to treatment, his condition becoming progressively worse, and he began to have hemoptysis. Another blood Wassermann taken at this time was 4 plus,

and small doses of sulpharsphenamine were given. The systolic murmur heard to the left of the ensiform cartilage was first heard as a very faint, soft blowing murmur, barely audible. It developed in a few weeks time into a very loud, harsh murmur, unaccompanied by a thrill. At no time was there a diastolic murmur heard nor any murmur at the apex.

Patient died April 23rd, about three months after admission to hospital, and about eight months after the onset of his symptoms.

**Diagnosis:**

1. Myocardial failure.
2. Chronic passive congestion of lungs, liver spleen and other viscera
3. Pleural effusion
4. Acites

As to what caused the myocardial failure, we were unable to say. His age and the low pulse pressure suggested a rheumatic heart with a mitral lesion. On the other hand, absence of a rheumatic history, a greatly hypertrophied heart and a 4-plus Wassermann indicated a syphilitic condition. The murmurs heard did not appear to be due either to a mitral or an aortic lesion, but were probably due to tricuspid insufficiency resulting from the marked dilatation of the right ventricle.

**Pathological Report by Dr. J. Mott Rawlings**

The body is that of a well developed, well nourished Mexican man, which is fairly edematous especially in the scrotum and in the dependent parts. Marked pitting and edema is here present. Eyes are rather full and prominent. The body has been injected prior to the examination. No unusual marks are seen on the body, except there is a tattoo mark over flexor surface of left arm.

The usual Y-shaped incision is made and we discover a very moderate amount of fat over thoracic and abdominal regions, measuring about 1 cm. in thickness. The muscles are of good color and well developed. The peritoneum is opened and found to be smooth and shining, and clear straw-colored fluid is found in the peritoneal cavity. The abdominal contents are next inspected. The liver is found a full hand's breadth below right costal margin in the mid-clavicular line. It has a typical nutmeg appearance and the color varies from a reddish brown to a grey. In the right upper quadrant a slight amount of coagulated ascitic fluid is discovered. The visceral peritoneum is everywhere quite smooth and clear and the entire wall of the gut appears to be somewhat thickened. The spleen is large and hard and has a few adhesions over its lateral surface. The pelvic viscera show nothing unusual.

The right pleural cavity is filled with clear straw colored fluid, and covering the visceral pleura is a fibrinous material which can readily be brought out into strings. The left pleural cavity is next examined, and a large amount of straw colored fluid is likewise seen, which fills approximately the lower half of the chest in the supine position. The visceral pleura is similar to that of the right, being covered by a fibrinous exudate only to a lesser degree. The heart is found on palpation to be very soft, and the right auricle dilated, the entire width of the heart in the transverse position being about 17 cm. and the height being 13 cm. The outer surface of the pericardium is greatly reddened and injected, and there is an excess of fat present. An excess of pericardial fluid is found. This fluid is clear and straw colored and is estimated to measure about 75 c.c. The heart is next examined in situ. The right auricle is greatly dilated and quite thin. The right heart is hypertrophied and in its

atrial division is somewhat dilated. The left ventricle is quite firm to touch and the visceral pericardium is of a rather reddish hue. The very apex anteriorly of the left side feels quite soft. No other areas of definite softening can be made out in this left side. The left auricle shows no remarkable hypertrophy or dilatation. The pulmonic artery is next inspected for presence of emboli. Nothing but a post mortem clot is here discovered. The heart is next removed from the body cavity and is opened up following the course of the blood stream. Inspection of the heart reveals chiefly a tremendously dilated and thinned auricular wall on the right side. The tricuspid valve is markedly dilated and before cut would easily admit passage of all four fingers. The valve edge is thin and to all purposes it is felt that this valve is incompletely closed and gives the insufficiency of this valve. The ventricular cavity is next inspected and found to be greatly dilated. The pulmonic artery inferior to the valve is hugely dilated, showing evidence of pressure in the pulmonic circulation. The width of the wall of the right ventricle is 1 c. c. in its widest portion, thus illustrating hypertrophy and dilatation of the right side of the heart. The pulmonic valves are all well formed and delicate and so far as can be told from examination are competent. The left auricle is next inspected. Here we find a comparatively dilated chamber but not as large as that found on the right side, though this left chamber is somewhat larger than normal. Comparison of the endocardium of the right and left sides, show the endocardium of the left side is whiter, rougher and thicker than normal. Closer inspection reveals an irregular fibrosis of the wall, especially in the posterior aspect above the posterior mitral lesion. Inspection of the mitral valve next shows us a complete stenosis. The edges are hard and the opening measures in a curved circle 3 cm. in length by  $\frac{1}{2}$  cm. in width. Closer inspection reveals what might be vegetations at either end of the semi-circular orifice. Inspection of the valve from below shows a completely rigid opening which can not possibly close. Examination of all of the chordae tendinae show that they are practically non-existent and coalesce in thick heavy sclerotic masses which join up on either side as strong pillars. Inspection of the very apical portion of the left ventricle shows the myocardium is thinned out to a negligible quantity at one point. However, on either side of this the muscle is fairly thick although its firmness is rather doubtful. The trabeculae are markedly thinned and compressed against the apex of the wall. There is no dilatation of this left ventricle but there is an hypertrophy. The wall of this ventricle measures 1 cm. in width. The aortic valves are a little thickened, otherwise they are apparently competent. The orifices of the coronaries are inspected and the left one seems to be quite normal. The ascending branch of the coronary appears to be of good width. The left circumflex of the coronary shows walls a little thickened. The right coronary is likewise opened up throughout its extent and shows a slight thickening of its wall but no narrowing of the lumen. Close inspection of the first portion of the aorta reveals no suspicion of luetic involvement.

In summary of the heart, we have an old rheumatic mitral stenosis and insufficiency with dilatation of the right and left auricle, particularly the former, and a marked relative tricuspid insufficiency. Associated with this there is a dilatation of both ventricles and slight thinning of right ventri-

cular apex. No evidence of lues is found grossly in the heart.

The left lung is markedly compressed and boggy and is covered throughout its entire visceral pleura by tiny threads of fibrinous exudate. The left lower bronchus is opened up and shows a great deal of reddening of this tube. The pulmonic surface is thick and soft and presents a bright red appearance which is quite in keeping with a long standing passive congestion. The lung has a rather fibrous appearance to it. Going back to the heart, we find a very small thrombus at the right auricular appendage. The right lung is very heavy and hard and infarcts are found in several places. An old calcified node is found at the hilus situated laterally to the bronchi. This lung when opened up cuts like fibrous tissue and practically no air containing tissue is present. On the contrary the surface is meaty and of a consistency similar to that of the liver. This consistency is maintained through all the lobes on the right side. In the superior aspect of the upper lobe quite a large infarct is found. It is soft and of deep red color at the top and more purplish red at the base. There is a deep reddish black color over the surface covering an area which is very soft. Inspection of the pulmonic artery shows a very definite puckering and thickening of its wall.

The spleen is large, hard, firm and typically the picture of long standing passive congestion.

The liver is very large and heavy. It has the typical nutmeg appearance externally. The capsule is somewhat wrinkled. Inspection of the left lobe of the liver reveals an appearance which is quite interesting. There is very little true hepatic substance left. This same appearance persists through all the lobes. We see a great loss of hepatic tissue and replacement by either fat or connective tissue. This latter is represented by areas of white with raised edges, while the true hepatic substance is found in the more depressed parts, is of a brown color and irregular in outline. The picture is in keeping with an extreme degree of chronic passive congestion and one of long duration.

The right adrenal shows an occurrence of adenomata throughout its cortex. The left adrenal shows the same appearance.

The left kidney is very large, is extremely firm and its capsule is markedly edematous. Tenseness of this organ is most striking. On section we found the capsule strips readily leaving behind a smooth even surface. The cortex is rather well defined but of a deep grey-reddish color. The appearance is similar to that of marked chronic passive congestion. On closer inspection it might be said that a few of the glomeruli are slightly more prominent than normal. The parenchyma shows nothing unusual on numerous cross sections. The right kidney is practically the same as the left.

The gastro-intestinal tract is not opened up and reveals externally nothing of great interest. The bowel wall is greatly thickened and hypertrophied. The pylorus is well formed. The gastric mucosa is a little reddened and hyperemic in numerous places. This congestion is most marked in the cardiac region. The appendix is free. The ascending colon shows no pathology. Transverse and descending colon are essentially normal to external appearance. The small bowel shows a thickened wall, otherwise no pathology is noted.

The bladder has a slightly thicker wall than normal. The prostate is not enlarged. The scrotum is greatly distended with fluid.



In summary we have primarily a rheumatic mitral heart disease with mitral stenosis and insufficiency causing relative tricuspid insufficiency and extreme right auricular dilatation. There is also relative right and left ventricular dilatation and hypertrophy. There is some thinning of left ventricular apex and the right auricular wall is thickened and puckered, giving evidence of a chronic rheumatic lesion. Consistent with this picture is extreme passive congestion of the lungs showing markedly fibrotic changes and numerous infarcts, source of the infarcts being found in the right auricular appendage. The liver is largely replaced by fat and connective tissue and the spleen is typically hard and firm as found in chronic passive congestion. The kidneys show no pathology except chronic passive congestion.

Diagnosis: 1. Rheumatic heart disease with mitral stenosis and insufficiency.

2. Chronic passive congestion all viscera.
3. Fibrosis of lungs.
4. Pulmonary infarcts.
5. Pleural effusion and ascites.

#### DISCUSSION by DR. G. WERLEY

When I first saw him I suspected that he was syphilitic. The heart was hypertrophied and dilated without apparent cause. One pupil was larger than the other. No murmurs were made out. The aorta was not dilated. There was persistent edema and ascites. Digitalis failed to slow the pulse or produce diuresis and other diuretics including theocin and salyrgan were without result.

Later there was a marked systolic murmur at the apex, and finally a positive Wassermann; this seemed to confirm the idea of a syphilitic heart. However the case remained a puzzle.

I was not prepared for the post mortem findings.

On careful examination of the specimen one finds a number of interesting facts:

- (1) All four chambers of the heart are hypertrophied and much dilated.
- (2) The left ventricle is much larger than we find with simple mitral stenosis.
- (3) The aorta is narrow, only measuring 5.5 cm. in circumference.
- (4) The mitral orifice lies against the left ventricular wall. There are practically no chordae tendinae.

This is not the picture of a rheumatic heart with mitral stenosis. The hypoplastic aorta points to a congenital condition, as does the peculiar structure of the mitral orifice.

In pure rheumatic mitral stenosis we have a small left ventricle with dilatation of both auricles. The small aorta I think in this case, accounts for the large left ventricle, causing increased work.

Furthermore, valvular disease due to rheumatism practically always responds to treatment. This did not respond in the least.

The presystolic or diastolic rumble is almost invariably present in rheumatic mitral stenosis. No such murmur was found in this case.

The evidence for congenital mitral stenosis of unknown origin seems to me to be quite convincing. Ashoff bodies were not investigated.

## FOUR MONTHS' DYSPNEA WITHOUT EVIDENT HEART FAILURE

Case 14141, Case Records of Massachusetts General Hospital, from New Eng. Jour. of Med., May 12, 1928, p. 767).

### CASE HISTORY

An Italian laborer thirty-six years old entered January 5 complaining of dyspnea of four months' duration. He spoke very poor English and often contradicted himself. The history is incomplete and unreliable.

He had always had "asthma," worse in winter and aggravated by frequent winter colds. Further details were not obtainable. The asthma was apparently paroxysmal dyspnea with a good deal of coughing. Since August he had had a cough which had grown steadily worse, with ten to fifteen ounces of sputum daily, white or yellowish, occasionally foul, twice bloody. He had never been incapacitated by his asthma until four months before admission. With the onset of marked dyspnea at that time his face was swollen for several days. The dyspnea had increased, though at times he felt better. Since the onset he had steadily lost strength and six pounds in weight. He had had trouble in sleeping, whether due to orthopnea was questionable. He had not worked outside his own house since October 1, partly because of lack of work. Beginning in the middle of October he had frequent headaches and attacks of dizziness coming in two-week periods with remissions of a week or two. For the past month he had had none. Since November 1 he had been unable to work at all on account of dyspnea. For three months he had urinated twice at night. During the past month he had had occasional diplopia. During the past three weeks his legs and feet had been swollen two or three times. For two weeks he had been in bed on account of dyspnea, cough and edema. Recently his stools had been black. A day or two before admission he vomited.

Clinical examination showed a fairly well developed and nourished man, very dyspneic and wheezing. Face and lips extremely cyanotic, almost black. Face slightly puffy. Barrel chest. Expansion poor. Lungs: Sibilant rales over right chest anteriorly. Diminished tactile fremitus and breath sounds without bronchial breathing anteriorly and posteriorly on right side. Numerous medium and moist rales at bases anteriorly and posteriorly. Apex impulse of the heart felt in the fifth space 7.5 centimeters from midsternum, one centimeter inside the midclavicular line. Action regular. Rate 110. Right border of dullness 2 centimeters, supracardiac dullness 5. Sounds of good quality. Pulmonic second sound accentuated. No murmurs. Pulses and blood pressure normal. Artery walls not thickened. Brachials tortuous. An electrocardiogram showed well marked right axis deviation, normal rhythm, rate 120. Abdomen tense, distended, tympanic. Palpation unsatisfactory. Marked pitting edema of the shins and ankles. Pupils and reflexes normal. Vessels of fundi somewhat tortuous.

Amount of urine normal, specific gravity 1.020 to 1.032, a very slight trace of albumin at all of three examinations, rare to occasional leukocytes, occasional red cells, and rare to many granular casts in the sediment of two specimens. Renal function 40 per cent. Blood: hemoglobin 90 to 100 per cent, 12,000 to 10,000 leukocytes, 65 per cent. polymorphonuclears, over 6,500,000 reds at two counts, slight variation in size and shape, some

achromia, platelets large and increased in numbers. Wassermann negative. Non-protein nitrogen 41. Sputum purulent, foul at one of two examinations, blood at one, no tubercle bacilli. Stool negative.

X-ray examination showed the heart shadow considerably increased in size in all diameters, suggesting an enlarged and dilated heart. The hilus shadow showed increase in size and density. Both lung fields were less than normally radiant. The outline of the diaphragm was indistinct on the left.

Temperature 100.8° to 99°, rectal. Pulse 101 to 132. Respirations 24 to 36.

Until January 9 the condition was practically stationary. The patient was dyspneic and uncomfortable, but the condition did not appear to be at all critical. January 7 the visiting physician found an enlarged liver.

January 9 the patient suddenly had extreme difficulty in breathing, marked cyanosis and feeble pulse. He was unresponsive, with rolling eyes. The systolic blood pressure was a weak 60, the diastolic not obtained. The heart action was rapid, the sounds of fair quality. Both lungs were full of moist rales and rhonchi. The breath sounds showed little air entering the lungs. Expiration was difficult. The patient was given ten grains of caffeine and two doses of ten minims of adrenalin. The systolic blood pressure rose to 95, the diastolic to 75. Because of the high red count venesection was done, but only 200 cubic centimeters was withdrawn with difficulty and with no apparent relief of the dyspnea or cyanosis. Oxygen by nasal catheter gave little relief. The lungs showed less moisture, though the breathing was no less labored and no more air entered than before. He continued unresponsive for two hours, with no change in the lung condition, though the heart action became rapid and strong, with blood pressure 95/75. He showed no further response to medication and died a respiratory death five hours and a half after the onset of the attack.

Discussion of this case before the Clinical Club of Phoenix, at their regular Monday noon luncheon meeting, as follows:

#### DR. VICTOR RANDOLPH

The outstanding complaint of this patient was "asthma" of many years, standing we are told. For four months he had had cough and expectoration of a large amount of sputum, increased dyspnea, weakness and slight loss in weight. To these general symptoms are added swelling of the face four months before admission, insomnia, periods of headache and dizziness ending a month before admission. Nocturia for three months, recurrent edema, diplopia. It is also stated the stools have been black recently.

Positive points in the physical examinations are:

General good nutrition. Marked cyanosis with slight puffiness of the face. Pulse 110 and regular. Barrel chest with indeterminate pulmonary findings other than sibilant rales and distant breath sounds. Heart findings show no murmurs, but pulmonary second sound accentuated. Abdomen distended. Ankles and shins pitting. Brachial and retinal arteries tortuous. Temperature 100.8 to 99.5 rectal. Pulse 101 to 132.

Laboratory data show renal function 40 per cent, method of test not stated; very slight trace of albumen, a few leukocytes and red cells and many

granular casts in the urine, N.P.N. 41. Blood hemoglobin normal, slight leukocytosis and definite polycythemia. Sputum negative for T.B. Stool negative. Wassermann negative. X-ray shows enlarged heart with shading lung fields and indistinct left diaphragm.

Two days after admission enlarged liver was noted. Four days following admission patient died a respiratory death.

It is interesting to note how many causes of so-called "asthma" there are. Bronchial or anaphylactic asthma possibly the most common. But bronchitis and bronchiectasis are also very common. These may have an anaphylactic basis as may also tuberculosis which is occasionally the fundamental process in a case of asthma.

The other causes are more purely mechanical in their action. Other uncommon causes of this nature are polyps or other obstruction to the larynx, colloid goiter, large thymus, mediastinal tumors, pulmonary foreign body or malignancy, pulmonary abscess, congenital malformations of the larynx or bronchial system and syphilis.

In this case of such apparent long standing we can rule out causes other than anaphylaxis, bronchiectasis, benign pulmonary or mediastinal new growth, nephritis and possibly foreign body in the lung. It is conceivable that we may have one of these causes for the chronic asthma and a new cause for the present condition.

I do not believe that one of these causes explains the whole present condition. The final note of this record states that the patient died a respiratory death. In spite of this, had mitral murmurs been heard, I should consider myocardial disease on the basis of an old mitral lesion as the primary pathology with a subacute bacterial condition. But the description is so definite for some type of pulmonary obstruction as the ultimate cause of death. I have known of this clinical picture in carcinoma arising in the bronchus and protruding within two or three months into the trachea, with consequent suffocation. The x-ray need not show too much aside from hilus shadows in these bronchial carcinomas. These tumors also metastasize rapidly into the liver and frequently into the kidney and brain which we expect to show some changes in this case. Bronchial carcinomas sometimes give rise to bronchiectasis or abscess distal to their site. If we were able to explain this case in a single diagnosis, carcinoma arising in the left main bronchus with metastases would be my guess. On the other hand we may consider that there is sufficient evidence to justify a diagnosis of chronic glomerular nephritis. The urine contents and N.P.N. make one think of this. There is some evidence of arteriosclerosis although there is no hypertension and the specific gravity of the urine is high. However, this is almost a terminal condition and changes may have occurred. Possibly the headaches, the eye signs and the death were uremic manifestations. But it is difficult to explain that large amount of sputum from the lungs unless we say nephritis and bronchiectasis or abscess. On the whole I believe I will return to my first guess, chiefly because the description of death is so graphic and says nothing of Cheyne-Stokes breathing. They should have mentioned that in a uremic death.

#### Diagnosis:

Bronchial asthma.

Malignancy of bronchus with metastases to kidneys, possibly to brain and liver.

Bronchiectasis or abscess.

Cardiac hypertrophy.



Discussion, in part, as given before the Conference at the Massachusetts General Hospital, see above journal:

#### DR. RICHARD C. CABOT

##### Differential Diagnosis

As I said in the beginning, it ordinarily turns out to be true in our cases here that a man coming in for dyspnea has disease of the heart, the kidneys or both. I am convinced that he had no disease of the kidneys. He has disease of the heart, but not enough to explain his symptoms. We have to find disease in the lungs to account for the weakness of the heart and probably for most of the dyspnea he has. There is nothing to make us think of the rest of the body. Passive congestion of the liver and legs goes along with the weakness of the heart which I believe is present. He has hypertrophy and dilatation of the heart with no evidence of valve lesions.

The lungs are a puzzle. What can he have? (a) He cannot have tuberculosis in my opinion. They had many chances to look for tubercle bacilli and could not find them. He had very little fever. He is not emaciated; he is fairly well nourished. He has been sick too long for miliary tuberculosis. Our x-ray plate does not exclude miliary tuberculosis because it is not a good plate. But he has had his trouble pretty long for miliary tuberculosis. We can have subacute miliary tuberculosis lasting for weeks, but apparently this has lasted for months. I do not believe tuberculosis has anything to do with it. (b) Bronchitis? There is no doubt about it. But he must have had more than that. (c) Could he have pneumonia? There are no signs of it. The trouble has lasted too long for that. (d) Emphysema? Yes, I am inclined to think of that in this case. Extreme cyanosis not accounted for otherwise often does go with emphysema. We need a cause for the circulatory trouble in the lungs. Emphysema does go with it. There was apparently rightsided preponderance shown in the electrocardiogram, which goes with some sort of obstruction of the lung. (e) Chronic pneumonitis and bronchiectasis we cannot exclude. I am inclined to think he has it. If we had a good x-ray we might be more sure of it. Foul sputum and bloody sputum go with bronchiectasis when we do not see any signs of abscess.

The best reasoning from the evidence here is that his lungs will show a chronic pneumonitis with bronchiectasis and possibly some emphysema. The heart will show hypertrophy and dilatation but nothing else. The rest of the organs will show passive congestion.

#### CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD).

Chronic nephritis.  
Bronchopneumonia.  
Asthma.

#### DR. RICHARD C. CABOT'S DIAGNOSIS

Chronic pneumonitis.  
Bronchiectasis.  
Possibly some emphysem.  
Hypertrophy and dilatation of the heart.  
Chronic passive congestion, general.

#### ANATOMIC DIAGNOSES

#### DR. TRACY B. MALLORY

1. Primary fatal lesion.  
Bronchiectasis.
2. Secondary or terminal lesions.  
Emphysema.

Bronchopneumonia.

Hypertrophy of right ventricle.

On opening the chest very voluminous lungs were found, almost meeting in the center over the heart. There was a slight amount of fluid in each chest, only about 200 cubic centimeters. There were old fibrous adhesions on the right. The trachea contained a moderate amount of blood tinged frothy fluid, definitely mucoid. As we went down the bronchial tract this became greater in amount stickier and more purulent. The larger bronchi showed a reddish black discoloration of the mucosa. The smaller bronchi at the periphery of the lung were dilated diffusely throughout their extent, that is a tubular rather than a saccular type of bronchiectasis. Microscopic examination shows marked congestion, hyperemia of the mucous membrane of the bronchi, infiltration with plasma cells and also fairly numerous eosinophils, many of which show a round mononuclear nucleus. These are of rather common occurrence in bronchiectasis and asthma. The muscular layer did not show any definite hypertrophy as it ought to do in typical asthma. I should be inclined to class the case as one of chronic bronchitis with possibly a symptomatic asthma. The upper lobes of the lungs showed very marked and definite emphysema. Microscopic examination showed very early foci of bronchopneumonia.

As was predicted, the right heart was much hypertrophied. The wall of the left ventricle measured 8 millimeters in thickness, as against the normal of about 3. Virtually about half the total weight of the heart, as nearly as I could estimate, was supplied by the right ventricle.

The other organs showed a considerable degree of acute but very little chronic congestion. The text books on pathology always tell one that emphysema does not give chronic passive congestion of the liver. I have no explanation of that, but I have seen several examples where it was true. In this case there was a very slight degree of chronic congestion although a relatively marked acute congestion. The only possible explanation that I have is that when there is heart failure entirely on the right side of the heart it is perhaps too sudden and rapid to give the type of change in the liver that one gets in a mitral case, where the condition lasts over months, sometimes years.

## DIAGNOSTIC FORUM

### ABDOMINAL PAIN IN A SYPHILITIC

(Case No. 15112, Case Records of the Mass. Gen'l. Hosp., from New Eng. Jour. of Med., Mch. 14, 1929, p. 559).

#### Case History

First Admission. An Italian stage hand fifty-six years old entered October 27 with a diagnosis of nephritis, for observation. His chief complaint was abdominal pain.

He had had the pain almost daily for a year. It occurred most often ten or fifteen minutes after meals, occasionally at other times. More than once it awakened him at night. It was always at the sides of his abdomen from the pelvis to the ribs, on the sides of the two recti muscles. Occasionally when it was severe it radiated to both flanks behind and rarely covered the whole abdomen. When it was bad it doubled him up. It was colicky. Food or soda usually gave some relief. He seldom had nausea. Several times during the year he vomited. Two or three times the vomitus was coal black and liquid, not coffee grounds. For about a year his

bowels had been constipated and at times his stools had been black. His appetite had been poor; he had eaten only about half as much as usual. His weight had fallen during the year from 165 pounds to 118. During the past three months he had urinated two or three times at night and had had slight difficulty in starting the stream. Recently he had been dyspneic on exertion. He had grown pale. Five months before admission a syphilologist gave him some drops. While he was taking these he felt much better and had less pain.

His wife had lost six of eleven children in infancy and had two stillborn.

At eighteen he had a hard chancre and an inguinal gland that broke down. He was treated for several years by a physician. At forty-three he was given a three years' course of treatment in the South Medical Out-Patient Department of this hospital. Three or four Wassermanns were positive. Two of his sons were also treated in the South Medical Department. Both had interstitial keratitis, one had Huthchinsonian teeth and the other symmetrical synovitis. The last of the patient's treatments was six years before admission. For four years he had had indigestion about once a month—gnawing midepigastric discomfort coming half an hour after a meal and relieved by soda.

Clinical examination showed a well nourished pale man. Many carious teeth. Very marked pyorrhea. Musical rales throughout both lungs. Crepitant rales at both bases. Artery walls palpable and tortuous. Blood pressure 120/70. Two scars in the right lower quadrant of the abdomen. A mass, possibly fecal, in the left lower quadrant. Prostate enlarged to about twice the normal size and tender. Right pupil greater than left. Both reacted better to accommodation than to light, the right hardly at all to light. Fundi: discs blurred but normal in color. Vessels showed distinct nicking of veins by arteries. Reflexes normal.

Urine 33 to 70 ounces, specific gravity 1.020 to 1.012, a slight trace to a trace of albumin in all of three specimens. Two-hourly test showed specific gravity 1.008 to 1.012, a large trace of albumin in the day specimen. Renal function 5 to 7 per cent. Non-protein nitrogen 60 to 78 per cent. Blood: hemoglobin 45 per cent, reds 3,080,000 to 2,500,000, slight anisocytosis and poikilocytosis, 11,450 leukocytes, 73 per cent polymorphonuclears, platelets diminished. Wassermann and Hinton tests negative. Gastric analysis: fasting contents, free hydrochloric acid 60, total acidity 80.

X-ray showed nearly complete retention in the stomach at six hours. The prepyloric region was markedly deformed and constricted by an annular filling defect which was constant and through which peristalsis did not travel. The duodenum was filled with difficulty but appeared normal.

A lumbar puncture gave 15 cubic centimeters of clear colorless fluid, initial pressure 80, normal dynamics, cells, 3 lymphocytes, total protein 38, Wassermann, albumin and globulin negative, colloidal gold 1111100000.

Temperature 97° to 100.1°, pulse 71 to 99, respirations normal.

The patient had cramp-like pains on several occasions, usually at night, and vomited several times. Arrangements were made for operation. He decided however to go out and attend to some business before having the operation done. November 3 he was discharged.

History of interval. During his two weeks at home he was very weak and spent most of his time in bed. He had no pain, nausea or vomiting and no tarry stools.

Second Admission. November 16 he was read-

mitted. On entering the ward he vomited a kidney-basinful of greenish fluid.

On clinical examination he was pale and wasted, apparently very weak and acutely ill. Examination was otherwise as before. The hard irregular mass was again present on the left below the umbilicus, the size of an orange, freely movable but not tender.

Before operation urine normal in amount when recorded, specific gravity 1.010 to 1.020, a very slight trace to a slight trace of albumin at three of four examinations; renal function in two hours 3 per cent; blood, hemoglobin 30 per cent, reds 1,480,000; stool tarry, guaiac very strongly positive; non-protein nitrogen 160 to 110 milligrams.

The patient was comfortable in the ward and had no more vomiting after the day of admission. November 20, on preparation for operation—intravenous glucose 500 cubic centimeters, gastric lavage, morphia and scopolamin—he went into shock. The operation was omitted. The next day he seemed in his usual condition. November 22, 500 cubic centimeters of blood was transfused.

November 23 operation was done, followed by another transfusion. He did well during the next week on a gastric regime, had no fluid or distention. He was drowsy and slept a great deal. The urinary output was normal. December 2 the non-protein nitrogen was 78. (Did not die.)

Discussion of this case at the Yavapai County Medical Society and Medical Officers of Fort Whipple meeting of March 11, 1930, was given by Group 3, as follows:

#### PART 1.

#### DR. R. N. LOONEY

This man was admitted for observation with a diagnosis of nephritis. He contracted syphilis very early in life, at the age of eighteen. If he was treated the treatment was not successful according to his family history. His wife lost six of eleven children in infancy and had two stillborn children. He had two sons who were treated for syphilis. Twenty-five years after he contracted the disease, or at the age of forty-three, two or three Wassermann tests were positive.

Upon admission examination showed his prostate was enlarged and tender, and a mass in the lower left quadrant was found. Three weeks later on second admission a mass below the umbilicus was found, freely movable, not tender. Did this man have a malignant condition of the prostate gland with a metastasis in the region of the sigmoid, or was the mass fecal matter or retention in a greatly dilated stomach? We think he did not have cancer of the prostate and that the mass felt in the left side was feces.

The introductory paragraph in the history would lead us to think of some gastro-intestinal trouble. The second paragraph would point to trouble in or around the stomach. He had a great deal of digestive disturbance for four or five years. He had a gnawing pain in the region of the stomach, the pain coming on about half an hour after meals and relieved by taking soda. He evidently had had a hyperacidity for four or five years. The attacks became more frequent and for the past year he had had almost daily pain. Later on it occurred frequently ten or fifteen minutes after taking food. The pain was not epigastric pain usually seen in gastric ulcer or carcinoma of the stomach. It was always on the sides of the abdomen, from the pelvis to the ribs, and when severe radiated to both flanks. If we read the history of gastric ulcer we will find



many times that the pain is not epigastric; it may be a general pain over the abdomen and many times referred to the back.

He did not have nausea but vomited several times during the year. Two or three times the vomitus was coal black and liquid, not coffee grounds. At times the stools had been black. We are told that tarry stools, or black stools, if not from some drug, is always due to hemorrhage high up in the intestinal tract. He had lost a great deal of weight in the past year, about forty-seven pounds. He was anemic.

What disease in or around the stomach could cause the picture we have here? Gastric ulcer, duodenal ulcer, carcinoma of the stomach, or cirrhosis of the liver might cause any or all of the symptoms we have in this case. In cirrhosis of the liver there is nausea, vomiting, loss of weight and anemia. Hematemesis, due to obstruction of the portal circulation, causing hyperemia or congestion of the mucous membrane of the stomach may induce bleeding into the stomach in cirrhosis of the liver. In this case we have no history of cirrhosis of the liver, no jaundice, no ascites, no edema of the feet and legs.

This patient is of cancer age, fifty-six years old, but in cancer of the stomach there is a great deal of nausea; they may vomit many times a day. This man did not vomit a great deal and had no nausea. In cancer there is a deficiency or absence of hydrochloric acid. In this case we have an excess of hydrochloric acid, free hydrochloric acid being 60 and total acidity 80. Hematemesis in carcinoma of the stomach is coffee ground in character. This is due to the slow oozing of the blood from the ulcerating mass mixing with the gastric juice of the stomach before vomiting. The pain in cancer of the stomach is not so severe as in gastric ulcer; in fact, there may be very little pain. We do not think this man had carcinoma of the stomach.

Gastric ulcer and duodenal ulcer are very difficult to differentiate without the aid of the x-ray. There may be hematemesis in both, especially if the duodenal ulcer is near the pylorus. However, hematemesis is not seen as often in duodenal ulcer as in gastric. Pain in duodenal ulcer comes on about two or three hours after meals, often called the hunger pain, and is relieved by taking food. In this case the pain usually came on about ten or fifteen minutes after meals. Many of the symptoms of duodenal ulcer are the same in gastric ulcer, namely, hematemesis, tarry stools, abdominal pain, tenderness, anemia and vomiting.

As I have said before, it is often impossible to make a differential diagnosis of cancer of the stomach, gastric ulcer and duodenal ulcer without the aid of the x-ray. In this case the x-ray showed nearly complete retention in the stomach at six hours. The prepyloric region was markedly deformed and constructed by an annular filling defect which was constant and through which peristalsis did not travel. The duodenum was filled with difficulty and appeared normal.

We believe that this man's great loss of weight and anemia were due to stricture at the pylorus as the x-ray showed almost complete occlusion of the outlet of the stomach, and we believe they did a gastro-enterostomy to relieve this condition.

#### PART 2.

#### DR. BAYARD SULLIVAN

There are some points in this case that stand out very clearly. This man had syphilis contracted at the age of eighteen, which is further borne out by two or three positive Wassermann tests, six of

eleven children died in infancy, two still-births, pupillary reaction and many other things pointing to tertiary syphilis, including arteriosclerosis, vessels tortuous and palpable.

He came into the hospital with a diagnosis of chronic interstitial nephritis. He had evidently been to the outpatient department before that. The main thing this man came in for was pain in the abdomen which dated back for about one year. The history states that he had this pain off and on for four years. The pain was in the epigastrium, coming on half an hour after meals and relieved by soda. That practically states the case. There is a typical history of gastric ulcer. Of course, a man with a history of syphilis such as this man has would make us think of syphilis of the stomach, but that is a rare condition.

On account of the pain we must think of tabes dorsalis but the examination of the spinal fluid reveals nothing to bear out that diagnosis.

We see here a man who weighed 165 pounds and now weighs 118 pounds; who has pains on both sides of the abdomen, radiating from the pelvis to the costal margin, and frequently radiating from the flanks to the back, which is characteristic of gastric ulcer.

As has been stated, in gastric and duodenal ulcer one of the chief diagnostic aids is x-ray with barium meal. The x-ray in this case shows practically complete retention at six hours, almost complete obstruction with retention. The vomiting is due to overflow more than anything else. There is an annular ring and peristalsis does not move through it. Then there are tarry stools, guaiac positive, which is another characteristic of gastric ulcer.

We must also consider malignancy and duodenal ulcer. We know that malignancy is frequently engrafted upon a pre-existing gastric ulcer. In this case the blood count is 3,080,000 red cells with hemoglobin 45 per cent, later reduced to 1,480,000 and 30 per cent, which is not especially characteristic of anything except a secondary anemia which we would expect in a case of gastric ulcer existing about four years.

As my colleague has pointed out, the prostate was found to be enlarged. We must consider malignancy of the prostate although we see nothing to bear that out. It might possibly be malignancy of the prostate with metastases in the abdomen, accounting for this orange-size mass found in the left side, but we think that that was a fecal impaction.

We must also think of thrombosis in the mesenteric vessels, but that usually causes an acute distention and very severe pain, which have not been stated in this case.

Our diagnosis is gastric ulcer with obstruction and retention; chronic interstitial nephritis; arteriosclerosis; secondary anemia; and possibly chronic bronchitis and emphysema, as there were wheezing rales heard throughout the chest.

Discussion of this case by the Clinical Club of Phoenix, at their Monday noon luncheon, was as follows:

#### DR. FRANK J. MILLOY

This patient has neuro-syphilis but it is unlikely that his lues is entering into his abdominal pathology, although a peptic ulcer is like a fracture in a syphilitic. It heals better when the patient is given luetic treatment as well as regular treatment for the ulcer. The four years of indigestion with gnawing mid-epigastric discomfort coming on one half to one hour after meals, relieved by soda, combined with the high free Hcl and x-ray findings prove

the presence of ulcer. There is some speculation, however, as to the cause of the acute abdominal symptoms present at the time of entrance to the hospital and the history is lacking in detail for positive diagnosis. It is either caused by complications arising in the ulcer or by malignancy in the colon. At the first examination as well as two weeks later this hard, irregular, freely movable mass was present in the left lower quadrant. If this were a malignancy, it would explain his acute symptoms and might also help to explain the high N.P.N. by causing some intestinal obstruction and he would have been relieved by operation (anastomosis and possibly a resection). However, this was probably not the case or a barium enema or some other x-ray finding would have been given by this radiologist and the operation would probably have been two stage.

The tortuous, palpable arteries, the fixation of specific gravity of the urine, and the impaired kidney function evidenced by the low phthalein excretion and high N.P.N. is proof of chronic nephritis. The large trace of albumin and absence of casts point to arteriosclerotic nephritis. The blood pressure was probably considerably higher before the development of the secondary anemia. The dyspnea is caused by his sudden onset of secondary anemia. The x-ray findings are very definite for high grade pyloric obstruction with the lesion on the proximal side as it reports the duodenum outlined. It is not malignant. The history of this pain for a year combined with the free HCl rule out carcinoma. The obstruction could be caused by either the tissue narrowing or by spasm. The vomiting without nausea is characteristic of pyloric obstruction caused by peptic ulcer. The coal black vomitus and tarry stools mean that he has had an acute hemorrhage from the ulcer. This is also revealed by the low hemoglobin and red count.

There is a little discrepancy again in the history. It speaks of the pain coming on 10 to 15 minutes after meals, relieved by food. The severity of this pain and the very short interval between its occurrence and the taking of food might be explained by pylorospasm, but it is very suspicious of further complication. The fact that it is present on both sides of the abdomen and radiates down into the flanks and over the entire abdomen makes me think that this is also a slow perforative type of ulcer with localized peritonitis. This is further evidenced by the white count of 11,450. The operation was a posterior gastro-enterostomy.

Diagnosis:

1. Neuro-syphilis.
2. Arteriosclerotic nephritis.
3. Gastric ulcer with pyloric obstruction and acute hemorrhage and very possibly slow perforations with localized peritonitis.

#### DR. T. T. CLOHESSY

The outstanding points in this case are, pain in the abdomen after eating, of one year's duration, blood in the vomitus and stools, very rapid wasting (47 pounds in a year or 4 pounds a month), and a roentgenologic showing of a prepyloric annular deformity and constriction with stomach retention of six hours. All this in an undoubted syphilitic. Add to this a blood picture of severe cachexia. If syphilis were eliminated in this case, one would not hesitate to diagnose gastric cancer. A syphilitic infiltration of the stomach wall, admittedly much rarer than carcinoma, could, however, give a very similar picture. Five months before admission to hospital he had relief of symptoms from taking "some drops," evidently iodides. We often get

symptomatic improvement in ulcer or other anatomic disease of the stomach in a syphilitic, with no demonstrable change in the diseased anatomic condition. The emaciation in one year is much greater than we would expect from syphilis alone. Syphilides of the stomach are very rare. Hemorrhage of the gastric mucosa in syphilis, as in the skin, is not often found. Obliteration, with anemic necrosis and ulceration, not erosive invasion of vessels with hemorrhage, is the distinctive feature of the pathology of the syphilitic lesion. Hemorrhage is characteristic of advanced carcinoma. For four years he had intermittent gastric pain or discomfort, relieved by soda, possibly a peptic ulcer. It is stated that the present pain comes on most often ten or fifteen minutes after eating. A few lines further on it is stated food or soda gives relief. The trouble in the prostate and the lung symptoms would point to metastases.

Diagnosis: In my opinion the preponderance of evidence points to gastric cancer, although I do not believe that, clinically, as absolute exclusion of a gastric syphilid can be made, a prepyloric gastric, syphilitic infiltration.

Diagnostic conclusions offered by other members of the Club were as follows:

Dr. O. H. Brown:- (1) Pyloric stenosis from saddle ulcer; (2) chronic constipation, luetic structure of colon; (3) syphilis; (4) prostatitis; (5) pyorrhea, teeth caries; (7) nephritis; (8) anemia, secondary; (9) chronic bronchitis

Dr. J. M. Greer: Ulcer of stomach with pyloric obstruction; syphilis; there is a possible associated linitis plastica; nephritis.

Dr. W. W. Watkins: History suggests syphilis and stomach lesion; clinical examination suggests arteriosclerosis and prostatic; laboratory findings indicate chronic glomerulonephritis and stomach syphilis; final diagnosis, syphilis of stomach, chronic glomerulonephritis, arteriosclerosis.

Dr. Howell Randolph: Carcinoma of stomach; metastasis to lung; syphilis, vascular and neuro.

Dr. A. C. Kingsley: Arteriosclerosis; syphilis; nephritis; peptic ulcer.

Dr. S. I. Bloomhardt: Gastric ulcer; nephritis; arteriosclerosis; luetic infection.

Dr. Fred G. Holmes: Syphilis of stomach; arteriosclerotic nephritis.

Dr. R. J. Stroud: Neurosyphilis; ulcer of stomach with pyloric stenosis; arteriosclerosis including nephritic manifestations.

Discussion of this case at the Conference at the Massachusetts General Hospital (see above journal) was as follows:

#### RICHARD C. CABOT, M.D.

"Coal black vomitus" is quite a statement. I really think it was something.

Of course syphilitic glands do not break down.

The synovitis and keratitis in his two sons is pretty good proof of congenital syphilis.

The main suggestions up to the beginning of the clinical examination are (a) syphilis and (b) peptic ulcer.

The right eye suggests an Argyll-Robertson pupil.

The interval history is striking I think.

We suddenly stop because he has not died. What have we got to make a diagnosis on? He has two separate diseases so far as I can see. He has chronic nephritis and he certainly has an obstructing gastric lesion which can only be one of two things, either ulcer or cancer. Either is perfectly



possible. He is at the age when both are perfectly possible. He has symptoms on the whole more like ulcer. The quantity of blood is more like ulcer. The x-ray picture so far as I know, which is not very far, could do for either. His gastric chemistry is a good deal more like ulcer than cancer. You can have any gastric chemistry in either, but in cancer there is usually a lower acidity than he has. I think that is as far as I can go. On the whole it seems more like ulcer.

A Student: Would you consider chronic nephritis? Dr. Cabot: There is no relation between the two. It is rather strange that he did not have a high blood pressure. I do not know how to account for it unless it has been higher before but has come down because he is so weakened by hemorrhages.

A Student: What is the likelihood of a carcinoma on top of the ulcer?

Dr. Cabot: Slight, I should say, because that is a rare condition.

A Student: Is loss of weight in favor of ulcer rather than cancer?

Dr. Cabot: Not when he is eating as little as he is.

A Student: Is the appetite affected in ulcer?

Dr. Cabot: No; usually it is good. But ulcer patients sometimes starve themselves, so that one sees emaciated cases of ulcer.

A Student: How about that mass?

Dr. Cabot: I do not know what that is.

A Student: Do you think it is cancer of the stomach? It is just below the umbilicus.

Dr. Cabot: Let us go back to the description. "A mass, possibly fecal, in the left lower quadrant." That is a queer place for the pylorus to be. What does it say the second time? "The hard irregular mass was again present on the left below the umbilicus." That certainly is a peculiar place for the pylorus. I do not believe it. If you ask what it is, I do not know. I think it might be feces.

A Student: Are leucic lesions of this sort in the stomach at all prominent?

Dr. Cabot: The only cases I have seen were very diffuse lesions over the whole stomach wall, not confined to the pylorus. I do not believe there is any such thing as leucic lesion of the pylorus alone.

A Student: What is the significance of the enlarged prostate?

Dr. Cabot: It does not seem like a malignant prostate. I suppose it is the ordinary type of prostatic enlargement. Perhaps this does produce obstruction, but we are not told anything about it. Many large prostates do not. If it does we are not at all sure about it. Bladder symptoms are not mentioned.

#### PRE-OPERATIVE DIAGNOSIS

Carcinoma of the stomach.

#### OPERATION

Transverse incision. Anesthesia was induced by infiltrating the upper abdominal wall with 50 cubic centimeters of 1 per cent novocain. A transverse rectus incision was then made and anterior splanchnic anesthesia induced by injecting 75 centimeters of ½ per cent novocain against the body of the lumbar vertebra between the aorta and the vena cava. This gave adequate anesthesia to free up part of the greater curvature. There was an indurated mass at the pylorus firmly adherent to the pancreas. The mass showed a definite crater about two centimeters in diameter. The stomach was considerably enlarged. There were no metastases to the liver. The regional nodes were enlarged. The abdomen was otherwise negative. The anesthesia

was insufficient to free the growth at the pylorus, therefore the local novocain was supplemented by ethylene.

The gastrocolic and gastrophepatic omentum were tied off, the stomach was lifted and the tumor was dissected from the substance of the pancreas with some difficulty. This involved dissecting off part of the head of the pancreas. The duodenum was divided and inverted. About half the stomach was removed and the end sewed and inverted with three layers of continuous catgut. A posterior gastro-enterostomy was then done from left to right and the wound was closed without drainage.

#### POSTOPERATIVE DIAGNOSIS

Questionable carcinoma of the stomach.

#### FURTHER DISCUSSION

Dr. Cabot: At the beginning of the operation they said carcinoma of the stomach. At the end they said questionable carcinoma of the stomach. With the thing in their hands they could not tell, and I do not see how we can tell.

#### CLINICAL DIAGNOSIS, FIRST ADMISSION

Carcinoma of the stomach.

Chronic nephritis.

Possible tabes dorsalis.

#### INTERPRETATION OF X-RAY, SECOND ADMISSION

The findings are those of obstructing carcinoma of the stomach.

#### POSTOPERATIVE DIAGNOSIS, SECOND ADMISSION

Questionable carcinoma of the stomach.

#### DR. RICHARD C. CABOT'S DIAGNOSIS

Chronic nephritis.

Gastric disease, probably ulcer, possibly cancer.

#### PATHOLOGIC DIAGNOSES

Ulcer of the duodenum.

Carcinoma of the duodenum.

#### DR. TRACY B. MALLORY

A portion of the stomach was resected. It showed a large oval ulcer at the pylorus measuring one by two centimeters surrounding about one-half the pyloric ring and extending both into the duodenum and into the stomach. In the base of the ulcer was a blood vessel of considerable size, an artery showing a fresh thrombus at the eroded end. The edges of the ulcer were a little suspiciously hard, sufficiently so that Dr. Hartwell definitely committed himself that it was cancer on gross examination. Some of the rest of us who saw the specimen did not feel entirely sure of it.

Microscopic examination however showed a narrow rim of carcinomatous tissue. The situation, the general appearance, the character of the whole thing very strongly suggest that it is a case of cancer developing on ulcer. It is certainly as suggestive of that as any case I have seen.

Dr. Cabot: Is there anything to say about this mass in the left lower quadrant?

Dr. Mallory: No sir. There is nothing to account for it.

Dr. Cabot: Everyone was right.

#### A CASE WITH FOUL SPUTUM AND PAIN IN THE RIGHT CHEST

(Case No. 14451, Case Records of Massachusetts General Hospital from New Eng. Jour. of Med., Dec. 27, 1928, p. 1325.)

#### Case History

First admission: An Italian tailor forty years old entered January 21 complaining of lung trouble.

Two years before admission he had "bronchitis." After this he was perfectly well until March, nine

months before admission, when he had pain in the region of the right scapula lasting only a few minutes. He felt well for a week. Then he began to spit up very foul blood streaked sputum, three cupfuls a day. He had fever and was in bed two or three weeks. Then he worked two days a week for three weeks. Then he was ill again, and had not worked since that time. He had had foul sputum ever since the onset. He coughed a great deal at night. At present he was raising one to two cupfuls of sputum a day. He had seen no blood for months. He had had intermittent periods of temperature. He had occasional pain in the right chest in the region of the third to the sixth ribs in front running nearly horizontally around the axilla to the back. He had never had pulmonary hemorrhage. During the past year he had had many neck sweats at night, no general sweats. His bowels were constipated. His best weight was 154 pounds, his present weight 135. He had lost 15 pounds in the past year.

His family history is negative except that his mother died of shock.

He had gonorrhea at twenty-two. Ten years before admission he had a white stool once only. For four months he had urinated once at night at times. A month before admission he caught cold, had pain in the chest and at the same time swelling of the left knee with pain on walking lasting four days.

Clinical examination showed a well nourished, sallow man. The right chest was slightly flattened. Respiratory movements were decreased in comparison with those of the left chest. There was slight dullness throughout the entire right chest, most marked in the lower half posteriorly, where there was a suggestion of bronchial breathing. The left chest was not remarkable. The fingers were clubbed. The rest of the examination was negative.

Urine normal. Blood not recorded. The sputum showed 50 spirochetes in a five-minute search.

X-ray examination showed the diaphragm normal. The right lung field was smaller and less radiant than the left. There was diffuse irregular mottling extending from the base to the apex, most prominent in the hilus and the cardiophrenic angle. Fluoroscopically the area of greatest dullness appeared to be at the lung root on the right side. No definite fluid level could be seen.

Until January 23 temperature 98.4° to 99.3°, pulse 87 to 110, respirations normal. Afterwards temperature 96.8° to 100.8°, pulse 72 to 122, respirations 19 to 43.

By advice of the Thoracic Clinic bronchoscopy was done January 25. It was essentially negative. Nothing pathological was noted in the right bronchus except increasing hyperemia of the lining. In spite of the use of a large amount of cocaine it was impossible to control the patient's cough. The terminal bronchus was seen. Except for redness nothing pathological was noted. 20 cubic centimeters of lipiodol was introduced to various points of the right bronchus but was immediately coughed up. The patient was discharged February 1 with advice for a course of nearsphenamin in the Out-Patient Department. His weight at discharge was 115½.

History of interval. In the South Medical Department he was given seven intravenous injections of nearsphenamin 0.3 grams. His Wassermann was negative. No indication of lues was found. He thought the treatment did him no good. He raised more sputum at night. It was however less foul than when he was in the hospital, and he gained a little weight. Every two or three weeks he had a temperature of about 100° for a day or two. He often had pain for a short time in the right chest in front and at the side. A month before readmission

the pain was so severe for twenty-four hours that he could not cough. During the interval between admissions he worked three to four hours a day two or three times a week. In April examination in the Pulmonary Clinic showed his weight 123½, temperature 99.6°, pulse 126, all signs at the right base somewhat better since the nearsphenamin.

Second admission, May 4.

On clinical examination he was rather thin, coughed persistently and raised much purulent sputum. There was pyorrhea. The left breast was semi-feminine in character. The point of maximum intensity of the heart was in the midline at the ensiform process. The left border of dullness was slightly inside the left nipple line, the right border at the right normal. Blood pressure 98/46. Spleen felt below nipple line. The sounds were heard best at the point of maximum impulse, also heard well at the fifth interspace and the left border of the sternal junction and in the left midaxillary line. They were not heard at all well in the usual apical region. The fingers were markedly clubbed. The expansion of the lungs was equal. In the back the breath sounds in the left lung were fairly harsh and diminished on the side in the axillary line. Some crackling rales were heard at the left base. In the right back the breath sounds were very harsh at the apex, harsh with shallow breathing throughout the rest of the lung except on the side in the axillary line, where the sounds were diminished, and in two small regions medial to the right scapula and just above the right base, where the breathing was cavernous. Spoken voice was loud in both backs. Vocal fremitus was greater in the right lung, especially increased above the right scapula. In front the breath sounds were shallow and harsh throughout the right lung but diminished in the axilla, where a few crackling rales were heard. In the left front the breath sounds were shallow, but less harsh than in the right, and less diminished in the axilla.

The urine was negative. The blood is not recorded. The sputum showed no tubercle bacilli.

Temperature 98° to 101°. Pulse 77 to 111. Respirations normal except for one increase to 30 the day before operation.

X-ray examination showed the process in the right chest more extensive than at the previous examination. It now extended well into the apex.

May 10 operation was done. Soon after reaching the ward the patient became cyanotic, had rapid pulse, and passed into a state resembling shock except that the blood pressure was not especially low. He was given oxygen, and seemed to improve in color and a very little in general condition. At midnight he died.

The discussion of this case before the Clinical Club of Phoenix at their regular Monday noon luncheon, was as follows:

#### DR. FRED G. HOLMES

A case of pulmonary disease with sudden onset expectorating a large amount of foul blood-streaked sputum almost always means abscess. Whether the abscess is primary in itself without ascertainable focus from which the infected material came to the lung, or the result of material carried from a phlebitis (infarct) or the result of pneumonia or suppuration in the abdomen or what not, is to be determined.

The most frequent cause of pulmonary abscess is pneumonia of which there is no evidence in this case. Another frequent cause of pulmonary abscess is following an operation, especially in the upper respiratory tract. None had been done in this case.



The next most frequent cause is infarct from a vegetative endocarditis or phlebitis. The picture would fit very well with infarct. The initial pain, followed a week later by the foul sputum, would be quite characteristic. The physical findings in such a case often simulate an effusion and the signs of cavitation are found in many cases. The fact that spirochetes were found in the sputum would, together with the pyorrhea, indicate a Vincent's angina. The fact that the sputum was cleared somewhat by neosalvarsan would lend strength to the thought that it might be a prime etiological factor. However, it was likely a secondary invader as so often happens and not the prime cause. The course of the disease would not be typical for it. There is no direct evidence of syphilis in this case. There were no tubercle bacilli found in the sputum, the location and course of the disease were most unusual for tuberculosis and it seems that the diagnosis of tuberculosis could be rejected.

Regarding the source from which the infected infarcts came, we look first to the heart. Adequate information is not given regarding the real condition in the heart but it shows enlargement especially to the right. The most common cause of the infarct would be vegetative endocarditis of the right heart although a mitral stenosis may cause such a stasis in the pulmonary circulation that thrombus occurs. There is no such evidence of stasis here nor any evidence of phlebitis or would fall back on the diagnosis of vegetative endocarditis of the right heart.

There may very possibly be a pericarditis with effusion.

The diagnoses ventured are:

Pulmonary infarction.

Multiple abscesses of lung.

Chronic vegetative endocarditis.

Possible pericarditis with effusion.

Diagnostic suggestions by members of the Club were as follows:

Dr. O. H. Brown: Pulmonary abscess following pulmonary embolism; endocarditis; pyorrhea; Vincent's infection?

Dr. F. C. Jordan: Pulmonary abscess.

Dr. T. T. Clohessy: Lung abscess.

Dr. J. M. Greer: Malignancy of the lung with secondary infection.

Dr. H. P. Mills: Pulmonary abscess or lung cancer.

Dr. F. J. Milloy: Abscess of lung.

Dr. Howell Randolph: Pulmonary carcinoma with secondary abscess.

Dr. R. J. Stroud: Abscess of lung; may be carcinoma or syphilis; secondary Vincent's angina.

Dr. W. W. Watkins: History suggests abscess, fetid bronchitis, gangrene of lung or bronchiectasis. Clinical examinations add nothing new; laboratory and x-ray examinations bring cancer into picture; diagnosis of cancer of lung with abscess formation, or lung syphilis.

The discussions by Group 2, of the Yavapai County Medical Society and Medical Officers of Fort Whipple, at their meeting of March 11, 1930, were as follows:

#### PART 1.

##### DR. GEORGE C. McCARTY

Having the case of an Italian tailor, aged forty, living under conditions not the most sanitary, with a history of loss of weight, with diminished expansion, increased dullness, anywhere from harsh to

bronchial breathing throughout the entire left side, we are inclined to believe, upon the surface of it, that he has tuberculosis. However, with the amount of involvement he apparently has we do not believe he would have an active pulmonary tuberculosis without some evidence of hemorrhage or tubercle bacilli in the sputum.

Among the other conditions that this man may have is cancer. The x-ray shows a mottled appearance throughout the entire lung, with an increased density at the root of the lung. Ordinarily cancer area is likely to be mapped out. I recall one case area is likely to be mapped out. I recall one case here four years ago which came to autopsy. The case came to this section of the country diagnosed as tuberculosis, with mottling throughout the entire lung. Upon autopsy it was found that that case was sarcoma.

In this case there is the possibility of spirochetosis. In the examination of the sputum there were found 50 spirochets in one microscopic field in a found 50 spirochetes in one microscopic field in a five minutes examination. Spirochetosis could correspond very well with the indications as we find them in this case, but one authority states that where you have a spirochetosis that is rapidly advancing, as this condition has apparently advanced, you are likely to find a great number of spirochetes. I would not consider a field of 50 in a five minutes examination to mean anything exceptional. It is true that this man did have a severe pyorrhea and it is possible that he could have had a mild spirochetosis.

Among other conditions that are very like to occur, and the one which we think conforms greatly to the symptoms and physical signs in this individual, is bronchiectasis. This ordinarily occurs in the lower lobes of the lungs. However, I have seen nothing in the literature to indicate that it could not appear in the upper lobes.

Another condition is that of lung abscess or multiple lung abscess. We believe that the profuse sputum in this case, slightly blood streaked sputum, foul odor, the general mottling throughout the lung particularly at the base and at the root, strongly suggest that this man had a lung abscess or multiple abscess or bronchiectasis or both.

#### PART 2.

##### DR. ROBERT S. FLINN

In considering the differential diagnosis in this case Group 2 has been forced to the conclusion that a diagnosis of pulmonary tuberculosis or of neoplasm of the lung is untenable. The case therefore falls automatically into the group of chronic non-tuberculous infections of the lung and these disorders may be classified into the following three groups:

1. Chronic bacterial disease of the lung,
2. Fungus disease of the lung, and
3. Fuso-spirochetal disease of the lung.

Of the bacterial forms chronic Friedlander bacillus infection is probably the most important. It produces a picture not unlike that of pulmonary tuberculosis, there being cavities, rales, etc., in the apex. Streptococcus, staphylococcus and influenza bacillus may also produce chronic lung infections.

Fungus disease of the lung is a subject of fascinating interest. So little is known about the higher bacteria that it is impossible to classify the more important of the fungi. Chief among the higher bacteria or nocardia are actinomycosis and streptothrix. Actinomycosis is very prone to attack the lung and produces a lesion resembling a neoplasm. The yellow sulphur granules are found in the exu-

date from actino-mycotic lesions and are diagnostic.

Another group of the fungi is yeast; not unlike that glorified by Fleishmann, differing only in pathogenicity. *Monilia*, *torula histolytica* and *cidia* and all pathogenic although they do not attack the lung to the same extent as the blastomyces which produce an infiltration not unlike, and sometimes indistinguishable from, tuberculosis. The characteristic double ringed spore in the sputum is diagnostic. Coccidioidal granuloma, an affection common to the San Joaquin Valley in California, is produced by the coccidioidal imitis which produces a real endospore. Mention must also be made of the sporothrix and aspergillus, or members of the mold group.

The study of the fuso-spirochetal diseases has caused us to alter our conceptions with regard to certain disease entities of the lung. Evidence is accumulating from clinical, bacteriological, pathological and experimental studies to indicate that a number of pulmonary infections, previously regarded as distinct diseases, are in reality different manifestations of one type of infection. This group includes pulmonary gangrene, pulmonary abscess, bloody bronchitis, putrid bronchitis and primary bronchiectasis. Their common origin is suggested by the frequent occurrence of two or more of these conditions in the same patient. Abscess may exist in one part of the lung and gangrene in another, or a patient with an abscess may develop bronchiectasis in a neighboring bronchus, as is apparently the case with the patient under discussion. The bacteriology of these disorders has been worked out by Dr. David Smith of Raybrook Sanatorium in New York. The spirochete of Vincent's angina and the treponema microdentium are always found in association with fusiform bacilli. There are also present vibrios and small cocci. Apparently a combination of the four organisms is necessary for the production of the pulmonary lesion. Scrapings from the teeth of a patient suffering from moderate pyorrhea have been injected by the intratracheal method into anesthetized guinea pigs and rabbits. All types of pulmonary disease, from bronchiectasis to pulmonary gangrene, can be produced.

Smith reports the case of a dentist who apparently aspirated spirochetes while working on the teeth of patients suffering from pyorrhea. He developed acute fuso-spirochetal disease of the lung, which responded rather promptly to arsenicals. In fact it is the experience of many observers that the spirochetal disorders respond rather well to intravenous arsenicals and that the odor completely disappears.

In the animals injected arsphonamine usually produced a prompt improvement. If the arsenicals are given before there is any appreciable damage to the walls of the bronchi, bronchiectatic cavities remain, but the odor and sputum are largely done away with. I have seen several cases of bronchiectasis in which the odor was done away with by the use of arsenicals.

Turning to our case we see that there are a number of things which incline us to believe that there is a spirochetosis; the sputum is foul and contains spirochetes, and the history suggests lung abscess or bronchiectasis. On the other hand, the condition did not clear up under arsenic although we are told that there was some improvement.

### PART 3.

DR. HARRY T. SOUTHWORTH

Dr. McCarty has presented to you the differential

diagnosis of our case and Dr. Flinn has gone into the minutiae of the pathogenic organisms which might be considered and some of which are to be considered.

I should like to approach this case from a different angle and first call your attention to some fundamentals of the history in this case. It is stated that two years ago our man had bronchitis and, if you look at the history you will see that "bronchitis" is in quotation marks. It does not say how long he was sick, if he had a fever, or anything except that he had bronchitis. He seemed to be perfectly well for a year and four months or until nine months ago. Then he gives a history of having sudden severe pain below his right scapula lasting only a few minutes. Apparently it did not even make him catch his breath. Certainly there is no history that he went to bed or even quit his work. It does say definitely that he felt well for a week. Then he began spitting from two to three cups of foul sputum a day and following that he had fever. From then until admission he could work only one or two days a week. That much sputum shows a purulent infection of the lung or lungs. It does not seem to be consistent with that of bronchitis only, that he should have that sharp pain under the right scapula for a few moments and then suddenly to raise three cups of blood-streaked sputum.

We must look for something that will produce a foul, putrid sputum of two or three cups a day. What are they? Bronchiectasis, which will be discussed later, tuberculous cavity, putrid bronchitis (no one seems to know what that means), gangrene of the lung with foul sputum, an empyema rupturing into the lung, interlobar abscess rupturing into a bronchus, hepatic abscess rupturing into the lung, subdiaphragmatic abscess rupturing into the lung and neoplasm.

We can not absolutely rule out tuberculosis and tuberculous cavity. We can hardly conceive of neoplasm acting in this manner—the physical findings would have been more definite. We can rule out subdiaphragmatic abscess rupturing into the lung, and hepatic abscess rupturing into the lung.

This man presents a picture of sputum, which is foul, spirochetes in the sputum, evidence of a contracted lung, evidence of fibrosis, evidence of a heart being pulled to the right and further, clubbed fingers. There are many authors who say that tuberculosis per se never gives rise to clubbed fingers. We have seen this is our own experience. Perhaps nothing does this so quickly as bronchiectasis and abscess. Is it not quite safe to assume that his bronchitis of two years ago—possibly influenza to begin with, resulted in bronchiectasis or multiple abscess? It is certainly compatible with the history and physical findings. We believe that this man had perhaps one fairly sizable abscess but centrally located, which would not be revealed by physical examination or x-ray. It is true there was much shading which seemed to center around the root of the right lung, but the entire lung was more or less mottled, presumably the result of bronchopneumonia and consequent fibrosis. Multiple lung abscess or bronchiectasis or even emphysema, gives that picture of mottled lung.

We believe that this man was given salvarsan because of the spirochetes found in his sputum. He was discharged from hospital and came back no better, but physical findings indicate that he was better in that the sputum was not so foul. However, there was further extension of the process in the apex. Does the fact that this man had an involvement of the entire lung argue against bronchiectasis? No. It has been stated that if you



have an involvement of the lower portions of either lung, with clear apices it is almost a foregone conclusion that the patient has not a tuberculous infection but probably has bronchiectasis. However, that does not mean that if you have the involvement of all lobes it is not bronchiectasis.

This man returned to the hospital apparently improved but with progression of the condition. He was operated and we believe that operation was done with the idea of destroying the rigidity of the chest wall for the purpose of surgical collapse and possibly to drain some interlobar or central abscess. Almost immediately following the operation he was cyanosed and had symptoms of shock although the blood pressure did not drop. He was given oxygen and at midnight he died. We can not go so far as to say what caused death. He may have had so-called pleural shock, which Lilienthal says is nothing more than air embolism.

Messter and Jaches of New York give the following figures, which I think are very interesting:

Aspiration Abscess	
Post operative—Tonsillectomy	21
Other operations	6
Following unconscious states	
Submersion	2
Morphine	1
Alcoholic	1
Foreign body	2
Acute pneumonic gangrene	16
Non Aspiration Abscess	
Chronic pneumonic	21
So-called Grippe	21
Emphyemic	1
Miscellaneous	
Embolic (suppurative thrombo-phlebitis)	1
Tuberculosis	2
Secondary to carcinoma of lung	1
Secondary to carcinoma of esophagus	1
Actinomycotic	1
Diabetic	1
Syphilitic	1

Our diagnosis is multiple lung abscess or bronchiectasis.

The discussion at the Massachusetts General Hospital Weekly Conference was as follows (in part).

#### DR. RICHARD C. CABOT

If this history is accurate it means lung abscess or bronchiectasis. Spitting up quantities of foul sputum is as nearly pathognomonic as anything we have. It seems as if this history all comes back to the things we started with, foul sputa and symptoms in the right chest whereby we expect abscess or bronchiectasis.

The x-ray plates show a great deal of mottling. In the earlier plate it looks as if it was higher up. It is a good deal more diffuse than I should have expected from the history, more like bronchiectasis.

In giving injections of neoarsphenamin they were not thinking at all of syphilis but were giving it because the spirochetes found in the lung might respond in the way other spirochetes do.

#### DIFFERENTIAL DIAGNOSIS

I have not a doubt that before this operation was done either the patient or his friends were told that there was a pretty good chance of its producing this result. That is, a lung abscess under these conditions has a poor prognosis. He had been sick for a long time and I imagine he said he would

rather take his chances even knowing that his chances were poor.

I do not see that we have anything outside the chest to consider. It looks as if the heart had gone over towards the right, presumably by contraction of that lung, with a fibrotic process around the abscess. Just where the abscess is or whether there were multiple abscesses I do not know. I should suppose there were multiple abscesses. They did not reach any single cavity by the bronchoscopy. They hoped that they might be able to drain something that way. The fact that they did not reach it or see it seems to mean that it is not very close to the hilus. I do not see any reason to believe that the heart is abnormal.

Of course this is the sort of case in which we get renal and splenic amyloid, but we have no evidence of amyloid, no enlargement of the spleen and no urinary changes. So we have just to mention the possibility and leave it.

In the right lung there ought to be a lot of fibrotic change, a lot of fibrosis, presumably adhesions, I should suppose abscess. It is the sort of case where the distinctions are not very important. The reason I prefer to call it abscess is because of the sudden onset. Bronchiectasis generally comes on gradually, not as this apparently did suddenly.

They had a first rate chance to find tubercle bacilli. I think in a case like this that negative findings of tubercle bacilli are very good evidence against tuberculosis. One negative sputum is nothing, but six or twelve are strong evidence. Then advanced tuberculosis is almost certain to show something on the other side, and there is nothing by x-ray on the other side.

#### X-RAY INTERPRETATION, FIRST ADMISSION

The findings are those of a chronic destructive and fibrosing process chiefly in the hilus but reaching the major portion of the entire right lung, consistent with abscess.

#### X-RAY INTERPRETATION, SECOND ADMISSION

The findings are consistent with abscess.

#### CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Chronic lung abscess.

#### DR. RICHARD C. CABOT'S DIAGNOSIS

Multiple lung abscess with chronic interstitial pneumonitis and probably some bronchiectasis.

#### DR. TRACY B. MALLORY ANATOMIC DIAGNOSIS

Bronchiectasis.

Chronic interstitial pneumonitis.

Bronchopneumonia.

The important lesion in the case was a marked fibrosis of the right upper and middle lobes with great dilatation of the bronchi and numerous thin-walled cavities leading off the bronchi filled with slightly foul semipurulent material. Pathologically it is a little more typical, I should say, of bronchiectasis than of multiple abscesses. The changes in the bronchi were very marked indeed. The walls were three to four times the normal thickness, and there was definite dilatation extending well down into the smaller branches. The left lung showed a marked degree of compensatory emphysema and also an early bronchopneumonia.

The heart was entirely negative. There was no hypertrophy of the right heart.

His death came two hours after the operation. It seems almost certain that pneumonia must have started before his operation, and possibly the note

that his respirations rose to thirty on the afternoon before operation signifies the onset of pneumonia which was not suspected clinically. Pneumonia is a common termination of these cases. If material is partially expectorated and then drawn down through the bronchi into the lung a sudden onset of pneumonia is of frequent occurrence. The fresh pneumonia did show a great variety of organisms in the alveoli similar to those found in the abscess cavities on the other side.

Dr. Cabot: The only puzzling point to me is still the one I spoke of,—the sudden beginning of this process. Of course we can say that is due to an imperfect history, that his English was not very good. It is hard to think of bronchiectasis, beginning suddenly.

**MEDICAL INFORMATION IN SICKNESS AND HEALTH.** By Philip Skrainka, M. D., formerly editor of "Medicine and Surgery," etc. Foreword by W. A. Newman Dorland, A. M., M. D., F. A. C. S., Professor of Gynecology and Obstetrics and head of the Department of Obstetrics in the Post Graduate Medical School of Chicago; author of "The American Illustrated Medical Dictionary, etc. Cloth. Pp. 577 Coward-McCann, Inc., New York.

The scope of this book is broad, including the important diseases of the various fields of medicine. Innumerable diseases and disorders, including the various systems of the body have been reduced to such simple description as to be understood by the non-medical mind. Relative values of the symptomatology of even the most intricate and complex diseases are interpreted so that their connection with serious or inconsequential processes is distinguished. Consequently by this means it serves not only as a guide to the kind of medical service, general or special, which should be sought, but also as a means of alleviating the apprehension so frequently produced by disconcerting yet insignificant symptomatology. On the other hand, the author's broad medical conception has been definitely shown in the opposite direction by the continuous advice to the reader throughout, to apply always to reputable medical service for relief of those complaints indicating the onset of serious disease. As stated by the Journal of the American Medical Association "this book debunks many of the current health fads." While the work is written primarily for the laity, the information contained therein may be perused advantageously by the entire profession. It cements the relation between the doctor and the public by explaining just when the physician needs to be called, and, in the case of emergency, what to do until he gets there. It discourses also on social medicine and the philosophy of health and disease. It is orthodox and authoritative and discloses many of the fallacies of the current health fads. The book in no way attempts to supplant the work of the physician but is the most up-to-date reference for the laity as to the worth of the legitimate medical profession. The author has treated the difficult subject in a simple and engaging style. The technical make-up is good, the print is large and clear. The book is attractive and thoroughly instructive to the general practitioner and offers authoritative information for the layman.

**ALIMENTARY ANAPHYLAXIS** (Gastro-intestinal Food Allergy): By Gue Laroche, Charles Richet Fils and Francois Saint-Girons, Paris, France; Foreword by Professor Charles Richet, of the Faculty of Medicine of Paris, Member of the Institute and of the Academy of Medicine; translated by Mildred P. Rowe and Albert H. Rowe; preface by Al-

bert H. Rowe; University of California Press; Berkeley, California; 1930.

This is a small volume of 139 pages—pocket size. The contents are of such extreme importance and so little understood by the average practitioner, not especially interested in sensitization work, that every physician should read it. The allergists will all wish to own the book.

The subject matter deals with alimentary sensitization to food but in places they touch upon other types of sensitization than those of the alimentary canal.

When patients complain that they cannot eat certain foods because they get pain or nausea or distress of one type or another physicians are prone to think the conditions are imaginary. Such reactions may be severe and perhaps dangerous.

I agree wholly with the authors in practically everything they have to say about food sensitization in the alimentary canal. There is one statement which surprised me and that is that small amounts of foods produce sensitization whereas large amounts lead to immunity. In other places, however, for example on page 85, they say that patients sensitized to certain foods may eat them in small amounts whereas they cannot take them in large amounts without developing sensitization.

I have observed that the withdrawal from the diet of foods that persons are sensitized to may after a time eat that food in small amounts. It is very gratifying to me that these writers have found the same thing. Other points in which their work confirmed mine or vice versa is that sensitized patients should not take large amounts of any particular food and the administration of digestants may be of great aid in helping the patients to overcome reactions.

These authors claim the giving of pepsin and trypsin one hour before meals is of great value.

They have not, however, apparently discovered that most sensitization cases have an inadequate supply of hydrochloric acid in the stomach and that administration of acid is a great help in many of the cases.

I should like what I have said in this review to cause many physicians to purchase this little book and study it.

**THE COLLECTED PAPERS OF THE MAYO CLINIC AND THE MAYO FOUNDATION FOR 1928; Volume XX;** Edited by Mrs. M. H. Mellish, Richard M. Hewitt, M.D., and Mildred A. Kelker, B. S.; Octavo volume; 1197 pages; 288 illustrations; Philadelphia and London; W. B. Saunders Company; 1929 Cloth, \$13.00 Net.

This is the twentieth year for these volumes. This one has 214 contributors and 429 papers; 81 of which are reprints, 43 abridged and 72 abstracts; 233 are referred to by reference only. The volume has 1197 pages, of which 334 are devoted to the alimentary tract, 150 to the genito-urinary organs, 113 to the ductless glands, 88 to blood and circulatory organs, 27 to skin and syphilis, 85 to head, trunk and extremities, 69 to chest, 60 to brain, spinal cord and nerves and 21 to miscellaneous subjects.

There is an index of contributors, a bibliographic index and an excellent index of subjects.

Medical men generally are aware of the large amount of splendid research which is being done at the Mayo Clinic and will appreciate these collected reports.



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## CAUSES OF DEATH TWO HUNDRED YEARS AGO.

There recently came into our hands a copy of an English newspaper (The Northampton Mercury), in which were reproduced items of news "Two Hundred and Ten Years Ago." Among them was this "Weekly Bill of Mortality" of the city of London for the week ending April 29, 1720, reproduced here for the entertainment of our readers:

## Northampton Mercury.

London: The Weekly Bill of Mortality, From Tuesday, April 19,  
to Tuesday, April 29, 1720.

A Bortive	1	Head-ach	1	Small Pox	—
Aged	46	Headmouldshot	1	Spleen	2
Ague	—	Hooping Cough	1	Stilborn	2
Apoplexy	1	Horse-shoe-head	2	Stone	2
Asthma	2	Jaundice	1	Stoppage in the Stomach	2
Cancer	4	Looseness	1	Suddenly	5
Childbed	5	Lunatick	1	Swine Pox	1
Consumption	65	Measles	2	Teeth	1
Convulsion	143	Mortification	4	Tifick	8
Dropfie	14	Pleurisy	1	Twisting of the Guts	1
Fever	94	Rash	1	Worms	3
French Pox	5	Rickets	4		
Gripping of the Guts	9	Rising of the Lights	2		

Christen'd 331. Buried 515. Decreased in the Burials this Week 20.

## CASUALTIES.

Drowned in the Wet Dock, at St. Mary at Rotterbitb, 2. Found dead; one in a Coffin, at St. Bennet, Paul's Wharf; and one in a Well at St. Olave in Southwark. Executed 1. Kill'd 3 one accidentally, by the Wheel of a Waggon, at St. Saviour in Southwark, and one by the Wheel of a Cart, and one by the Kick of a Horse, at St. Giles's in the Fields. Overlaid 1. Suffocated in a Wash-Tun, at St. Saviour in Southwark, 1.

(The following appears as an editorial by William J. Mayo, in the August, 1930, issue of *Surgery, Gynecology and Obstetrics*, and summarizes in his masterly style the present situation with regard to the cancer problem.)

### AGAIN THE CANCER PROBLEM

The recent use of an extract of suprarenal cortex, in combating cancer, has received such wide publicity as again to attract general attention to the cancer problem. The question arises: what can we tell the laity about cancer?

First, it can be said that cancer never develops in sound tissues, and this knowledge is manifested in the understanding of physicians of the danger of permitting sources of chronic irritation to continue. Second, in the early stages of malignant change surgical removal of the growth, or, in suitable cases, the use of radiotherapy gives a high percentage of cures.

It is difficult, however, for the laity to appreciate to what extent cure is possible in cancer, and in their very fear of a condition which they believe to be hopeless they often delay surgical consultation. This widespread pessimism exists because when death occurs from cancer, the cause of death cannot be concealed, whereas persons who have been operated on successfully for cancer hide the fact that they have had malignant disease because general knowledge of it would stand in the way of their future advancement. As a consequence the public has known much of the horrors of the disease and little of its curability.

The close relation of chronic irritation to cancer of the visible surfaces of the body cannot be controverted. For instance, cancer of the scalp is common among the Chinese, who shave the head with dull and rough-edged instruments, and is uncommon among peoples who do not have this practice. In China the men eat at the first table, when the rice is hot, and their practice of throwing the rice by means of chopsticks with considerable force into the posterior part of the pharynx and the first portion of the oesophagus, results frequently in cancer in this situation. The Chinese women, who eat at the second table when the rice is cold, do not often so suffer.

A form of cancer of the mucous membrane of the mouth which is common in the Philippines and in parts of India, is the result of chewing the betel nut, which, wrapped in its leaf with lime, is carried almost constantly in the cheek. Note the great reduction in cancer of the mouth and about the gums as the result of good dentistry, and in cancer of the lip with the disappear-

ance of the clay pipe. It is said that cancer of the breast, so common in civilized women, has no corresponding frequency in women of those races who leave the breasts exposed. In the mountains of Kashmir, where the natives carry charcoal braziers filled with hot coals strapped to the lower abdomen, cancer of the skin just above the pubes is common.

The relation of chronic irritation to cancer of the external surfaces of the body is paralleled by cancers of the internal surfaces, but the evidence is necessarily indirect.

Cancer of the gall bladder is seldom seen except in connection with gall stones, and even those investigators who do not believe that cancer of the stomach often has its origin in ulcer, admit that cancer on ulcer does not occur in a percentage of cases which Hurst, of Guy's Hospital, London, puts at about 20 per cent. In our own experience, while the percentage in which the histological examination of excised cancers of the stomach for evidence of preceding ulcer varies in different series of cases, the development of gastric cancer on some type of demonstrable precancerous disease, such as ulcer, is present in more than 25 per cent. When cancer of the mesoblastic structures occurs, the preceding source of chronic irritation is probably biochemical in nature.

When we attempt to explain what happens in chronic irritation in relation to cancer, there are two outstanding points of view.

First, it is believed that some microorganism or other outside agent enters the body and gives rise to cancerous growth. However, if this were true, secondary cancers would show the histopathological characteristics of the organ in which they occurred, whereas they show those of the original lesion. For instance, if a cancer originating as an adenocarcinoma of the mucous membrane of the stomach extends to the liver by metastasis, the new-growth proves to be not a cancer of the liver, but a cancer of the mucous membrane of the stomach in the liver, proving that the malignant cell itself has been transplanted to the liver, and is itself parasitic.

Second, it is equally probable that when a breach of continuity in the tissues occurs as the result of long-continued chronic irritation, the attempt is made first to heal the defect with normal cells, but in the course of time, as the reparative processes are exhausted, cells less and less mature are thrown into the breach, until finally embryonic cells, but the best that can be supplied, replace the normal epithelium and take on malignant change.



This brings up an interesting side line of thought, and that is that the age of cells and their condition must play a prominent part in the development of malignant disease. Perhaps the reason cancer usually appears after middle age is that the cells of the body have lost the reparative power of youth, have a lessened immunity, and thereby have become more vulnerable. Again those organs of the body which have a relatively short heredity are more often involved than organs which we know to be more primitive and which might be said thereby to have gained hereditary resistance to the disease.

In this connection, the frequency of cancer of the stomach and of the large intestine and rectum, what might be called modern organs of convenience, as contrasted with the infrequency of cancer of the more primitive small intestine with its ancient heredity, is suggestive. Malignant disease of the testis, which is the primitive organ, is rare as contrasted with the many varieties of malignant disease of the ovary, a relatively recent organ derived from the primitive testicle. One can carry such a theory still further and point out the great incidence of cancer of the breast and the uterus in women at the menopause, whereas in men there is no such frequency of cancer in the generative organs, because no comparable senile change takes place.

If we attempt to visualize the problem of cancer, therefore, certain factors must be borne in mind. The age and the condition of the bodily cells, especially those cells that have a protective function, must be considered. Again, those organs of the body, the breast and the uterus, which undergo early senility, carry with them an increasing risk of cancer, and finally, the only reasonable explanation why 90 per cent of persons do not have cancer and why 10 per cent do have cancer is that there is a varying degree of immunity in individuals to the cause or causes of cancer, which leads to the hope that resistance to this disease may be increased as it has been in other diseases of man.

W. J. MAYO.

### BOOK REVIEWS

ROENTGENOLOGY: Its Early History, Some  
ORVILLE H. BROWN, M. D.

Associate Editor

Basic Physical Principles and the Protective Measures; by G. W. C. Kaye, O. B. E., M. A., D. Sc., F. Inst. P.; forty-nine illustrations; Paul B. Hoeber, Inc.; New York; \$2.00.

This is a small volume of 157 pages but it has a world of material about x-ray, its development and use.

The first chapter is of the history of Roentgen's discovery. Professor Wilhelm Konrad Roentgen of Wurzburg, Bavaria, discovered the rays, which now bear his name, upon June 8, 1895, by applying thousands of volts to an exhausted discharge tube. Many physicians yet living can testify to the excitement produced by the discovery.

The author in giving the foundation for Roentgen's discovery cites the work of Gilbert, the alchemist who led in early discoveries in electricity. Torricelli, in 1643, discovered the vacuum produced by a barometric column of mercury. Von Guericke devised the air pump. Boyle discovered Boyle's Laws and the use of the barometer. In about 1705 Hauksbee conducted experiments upon electrical discharge in a vacuum. Stephen Gray next found that metal wires conducted electricity. Abbe Nollet learned that there was no necessity to keep an electrical machine within a vacuum. Benjamin Franklin did the kite experiment and discovered the electrical nature of lightning. Davy and Faraday experimented with discharge tubes.

Other names connected with research in electricity which made possible the work of Roentgen are: Geissler, Plucker, John Henry, Grove, Ruhmkorff, Hittorf, Gassiot, Maxwell, Crookes, J. J. Thompson and others.

The nature of the Roentgen ray is discussed in chapter two. Other important chapters discuss Roentgen ray protection, working conditions in roentgenography, measurement of protective values, and future of roentgenology. This is a most interesting little book.

RESEARCH AND MEDICAL PROGRESS AND OTHER ADDRESSES: By J. Shelton Horsley, M. D., Attending Surgeon, St. Elizabeth's Hospital, Richmond, Va. St. Louis; C. V. Mosby Company, 1929; \$2.00.

There are fifteen addresses with the following titles: Research and Medical Progress, Physiology and Modern Surgery, The Influence of Physiological Research on Modern Surgery, The Ideals of the Surgeon, The Career of a Surgeon, Shall Surgeons Tell the Truth, Stomach Trouble, The Mimicry of the Symptoms of Peptic Ulcer and Cancer of the Stomach, Some Considerations Concerning the Treatment of Cancer, Modern Methods of Preoperative and Postoperative Treatment, The Medical Profession of Virginia, The Medical Profession of Virginia and State Medicine, Politics and Medicine, The Virginia Academy of Science—our Fifth Estate.

The reviewer was so interested that he read them all. Dr. Horsley is an entertaining writer and is a deep thinker and whatever he has to say is always worth study. He writes with a facile pen.

Two errors were noticed. On page 103, the 12th line from the top, the letter "a" is left out of the word perforated and on page 191, the third paragraph, fifth line, the word "in" is used where "it" is evidently intended. The book has a good index.

PRACTICAL MATERIA MEDICA—An Introductory Text to the Study of Pharmacology and Therapeutics Designed for Students of Medicine; by Clayton S. Smith, Ph. D., M. D., Professor of Physiological Chemistry and Pharmacology in the College of Medicine of the Ohio State University; and Helen L. Wikoff, Ph. D., Instructor in Physiological Chemistry and Pharmacology in the College of Medicine of the Ohio State University; Lea and Febiger, Philadelphia; 1929.

This book has been written primarily for the medical student and hence is presented in simple language and is as brief as possible. The surprising thing about this book is the world of material which

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is included in three hundred pages. The author has inserted many structural formulae which add much to the interest and value of the book, especially for those who have had advanced training in chemistry. The general practitioner and all others who prescribe drugs should find this a practical book.

**THE TREATMENT OF FRACTURES;** By Lorenz Bohler, M. D., Chief Surgeon and Director of the Vienna Accident Hospital; Authorized English Translation by M. E. Steinberg, M. D., M. S., of Portland, Oregon; Formerly senior officer on the surgical service to the U. S. Veteran's Bureau at Portland, Oregon; 234 illustrations. Vienna; Wilhelm Maudrich; 1929; \$5.00.

Professor Bohler has had extensive experience in the treatment of fractures during the last 19 years. His work is based on the treatment of 10,000 or more fractures and the study of about 70,000 roentgenograms. He was at the front during the world war in a 200 bed hospital and was privileged to treat many fractures. All kinds of fractures and their treatments are discussed. The 234 illustrations are all excellent. The book contains 185 pages. The type is clear and readable. The language is excellent. The work of the translator is commended. Unfortunately the book has no index. There is, however, an extensive table of contents. This should prove to be a practical book for those treating fractures.

**TREATMENT IN GENERAL PRACTICE;** By Harry Beckman, M. D., Professor of Pharmacology at Marquette University, Milwaukee, Wis.; Philadelphia and London. W. B. Saunders Company; 1950; \$10.00.

Every once in a while the reviewer of medical books has a surprisingly pleasant task. When I first came to Arizona I once remarked to a real estate man that I understood that one purchasing farm land here should be careful or he might get a poor tract of land. He replied that there was no poor land in Arizona but that some land was better than others. So I would say about books. There are relatively few poor books, or books without laudable purposes, being published; but certain books are better than other books. This is one of the remarkably good books with a worthy purpose.

Dr. Beckman realizes that the ordinary medical school gives too little time to therapeutics as compared to the time spent on other subjects. We have all had the general feeling that if a correct diagnosis is made the treatment is relatively easy. Undoubtedly this is true. The question of making a correct diagnosis is far more difficult than treatment but this does not justify the ignoring of treatment as much as it has been ignored. Most of us have, as a result, been all too weak on treatment.

The book is designed wholly for the purpose of forwarding scientific treatment of disease. It is written in good language. In many places the author has quoted directly from the original articles regarding the line of treatment he recommends. He also uses his own experience, which evidently has been large, whenever he feels justified in doing so.

In his preface he says that the true authors of the book are the men and women whose names appear in the bibliography. This is a fine thing for him to have said. It is impossible to review the book just as it would be impossible to review a dictionary. I have read a great number of his paragraphs and chapters and I am impressed that his methods of treatment are sane.

**A TEXT-BOOK OF PHARMACOLOGY AND THERAPEUTICS;** By Hugh A. McGuigan, M. D., Professor of Pharmacology and Therapeutics, Uni-

versity of Illinois, School of Medicine, Chicago; octavo volume of 660 pages; illustrated; Philadelphia and London; W. B. Saunders Company; 1928; \$6.00 net.

This is a handy volume of 660 pages. It is not over an inch and one-half thick; therefore it is easy to handle. It contains a world of material upon the latest knowledge of the sources, chemistry and action of drugs.

McGuigan is both concise and definite in his language, and hence says a great deal with relatively few words. His words are carefully selected. The reviewer, with the time he spent with the book, noted but one error. On page 293 the word tubercular is used where tuberculous more nearly gives the meaning intended.

The index covers 32 pages, three columns to the page. It is therefore extensive and appears most practical. Physicians who wish to keep abreast of the times on pharmacology will do well to obtain this book.

**MEDICAL CLINICS OF NORTH AMERICA;** Volume 13, No. 3; New York Number, November, 1929; Octavo of 272 pages with 58 illustrations; Volume 13, No. 4; Philadelphia Number; and the January, 1930, Number; Octavo of 301 pages, illustrated; Per Clinic year, July 1929 to May 1930, paper \$12.00; cloth, \$16.00; Philadelphia and London; W. B. Saunders Company.

The New York Number has many interesting articles among which may be noted the following titles: Pernicious Anemia by Drs. Tenney, Lintz, Jessup and Brooks; Functions of the Gall Bladder by Drs. Held and Goldbloom; Neurologic Clinic by Dr. Samuel Brock; Etiology of Heart Disease by Dr. Harold E. B. Pardee, and Presentation of the Constitutional Type by Dr. George Draper. In all there are sixteen articles and clinics, anyone of which is interesting reading.

Among the interesting subjects found in the Philadelphia Number are: Sporadic Typhus Fever by Dr. George Morris Piersol; Prophylaxis in Childhood by Dr. John C. Gittings; Bronchial Obstruction by Drs. Funk and Clerf; A Comparative Clinical and Roentgen Study of the Heart Borders by Drs. Miller and Gershon-Cohen; Angina Pectoris by Drs. Wolferth and Wood; Lipoid Nephroses by Dr. James E. Cottrell; and a second article on the same subject by Dr. James E. Talley (in this article phenolphthalein is considered as a cause of lipoid nephrosis); The Hypoglycemia Hazard in the Treatment of Diabetes Mellitus by Drs. Garfield S. Duncan and David S. Polk; Failure of Salt Restriction in the Treatment of Hypertension by Dr. J. M. Hayman, Jr.; and Purpura, an Essential Thrombocytopenia by Dr. Harold W. Jones and Agranulocytosis by Drs. Talley and Griffith.

The reviewer found these articles so profitable that he is keeping the volumes in his bed-side library, reading them one after the other as time is available.

**A MANUAL OF PROCTOLOGY;** by Chittenden Hill, Ph. B., M. D., F. A. C. S. Instructor in Proctology, Harvard Graduate School of Medicine; Surgeon to Rectal Department, Boston Dispensary; President American Proctologic Society; Third Edition, Thoroughly revised; illustrated with 86 engravings; Lea and Febiger, Philadelphia, 1929.

This is the third edition of this little book which is designed to present the essentials of modern proctology. The author has presented his own personal experience and also has included the information which he has been able to gather from the literature.

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There are fourteen chapters. Chapter one has to do with methods of examination and diagnosis; two is catarrhal diseases of the Rectum and Colon; three Ulceration of the Anus and Rectum; four Ulcerative Colitis; five Anal Fissure; six Rectal Abscesses; seven Fistula; eight Stricture of the Rectum; nine Hemorrhoids; ten Prolapse of the Rectum; eleven Pruritus Ani; twelve Rectal Incontinence; thirteen Benign Tumors and fourteen Cancer of the Rectum.

In the chapter on pruritus the reviewer could not find that the author took into consideration sensitization phenomena as one of the common causes of pruritus. He details the injection method of treating hemorrhoids.

This seems to be a practical book for the use of those dealing with rectal diseases. The proctologists say that too little attention is paid to this subject. Therefore this is probably a timely volume.

**MINOR SURGERY:** By Arthur E. Hertzler, M.D., Chief Surgeon, Halstead Hospital and Victor E. Chesky, M. D., Chief Resident Surgeon, Halstead Hospital. Second Edition; with 475 illustrations; St. Louis; C. V. Mosby Company, 1930.

Hertzler is an original thinker and he is a worker. He discusses the problems of minor surgery in a most understanding fashion. He uses no extra words. The sentences are terse and meaningful. Illustrations are used wherever they are at all helpful.

There might be some criticism for including such abnormalities as femoral hernia in a book on minor surgery. The author admits in his preface that there is no natural dividing line between minor and major surgery.

Every physician will find this a helpful book because sooner or later every physician—be he specialist of the strictest sort—will be called upon to serve in an emergency capacity upon some of the conditions dealt with in this text.

**THE COMMON HEAD COLD AND ITS COMPLICATIONS:** By Walter A. Wells, A.M., M.D., F.A.C.S., Professor of Oto-Laryngology, Georgetown University, Washington, D. C. With an Introduction by Hugh S. Cumming, M.D., Surgeon General, United States Public Health Service, New York. The MacMillan Company. 1929. \$2.75.

This is a common sense book on an important common disease—the head cold.

The author may write a bit too dogmatic—as though the problem was entirely solved; nevertheless he has written well. I dare say it will be found when the problem is solved, that his conceptions are very nearly right. He regards the head cold as bacterial, as metabolic, as the result of indiscretions in eating, abnormalities in the nose or sinuses, etc.

There is no question but what the common head cold needs more study and more careful consideration by both the profession and the laity. This is a timely little book.

**A TEXT-BOOK ON ORTHOPEDIC SURGERY:** By Willis C. Campbell, M.D., F.A.C.S., Professor of Orthopedic Surgery, University of Tennessee, College of Medicine, Memphis; Octavo volume of 705 pages; 507 illustrations; Philadelphia and London; W. B. Saunders Company, 1930; Cloth \$8.50.

This is a text upon the subject of orthopedics presented in a simple and comprehensive manner. He defines the essentials of modern operative methods giving technical illustrations for the case in question.

The book is monographic upon the subject and gives an excellent bibliography to each chapter. The

index is apparently most complete. The cuts and type are excellent.

**OSTEOMYELITIS AND COMPOUND FRACTURES AND OTHER INFECTED WOUNDS—Treatment by the Method of Drainage and Rest;** By H. Winnett Orr, M.D., F.A.C.S., Chief Surgeon of the Nebraska Orthopedic Hospital, Orthopedic Surgeon Lincoln General Hospital, Consulting Orthopedic Surgeon Bryan Memorial Hospital, Lincoln, Nebraska. Illustrated, St. Louis; C. V. Mosby Co., 1929.

It is a small volume of 208 pages. It is written in the best of English and the printer's art is beautifully portrayed. It is illustrated with excellent cuts.

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If I read Dr. Orr's manual clearly he holds that the usual treatment in America of osteomyelitis and compound fractures lacks but little of being correct and yet that little is sufficient to produce many bad results, much prolonged illness and perhaps an occasional but unnecessary loss of life and limb.

His first chapter is entitled "Sir Joseph Lister and Antisepsis." This chapter is worth the price of the book. It is interesting historical reading.

Dr. Orr has developed what is now called the Orr method of treating osteomyelitis and compound fractures or other surgical wounds, especially where there is bone infection. His method is based, he says, upon fundamental surgical principles and includes: First, immediate adequate drainage; second, maintenance at rest of inflamed parts by the application of plaster of Paris casts, aided when necessary by ice tongs or other methods of skeletal fixation; third, wide open drainage by means of a sterile vaseline pack; fourth, primary asepsis or antisepsis avoiding the use of irritating antiseptics in the wound; fifth, postoperative care emphasizing rest without antiseptic dressings and sixth, maintenance of all injured parts, bones and soft parts in their correct anatomic positions.

His claim is that even in the hands of the general surgeon, not especially trained in orthopedics, his method has given better than the usual results. He says that the surgical principles of his method are applicable to other wounds than just to fractures and osteomyelitis.

**THE WRITING OF MEDICAL PAPERS:** By Maud H. Mellish-Wilson, Editor of the Mayo Clinic Publications; Third Edition, Revised; 12 mo. of 184 pages; Philadelphia and London; W. B. Saunders Company; 1929; cloth \$1.50 net.

This is an extremely practical volume. All physicians who write articles will do well to have this upon their desks. One who reads the literature a bit critically must be impressed with the lack of display of proper knowledge of our language.

I read this little volume from cover to cover and intend to read it again. Every writer gets used to certain words and expressions, and tends to fall into error. Mrs. Mellish-Wilson, however, seems to have a sane point throughout.

On page 96 in the fifth paragraph, first line, one the expression "Pleasing to many people." Although this is a quotation I think it might have been preferable for her to have left off the quotation marks and used the word persons in place of people. On page 78-79 she discusses an introduction and does it beautifully. I once took a manuscript of mine to one of my critics and he said "Read me your introduction." I read it to him and he replied in language which I shall not quote, but which meant that I had either overshot or fallen far short of the mark. He then said, for example, if you were introducing me to an audience, what would you say of me? This gave me an understanding of what an introduction to an article or book should be. The introduction should tell the reading public

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in a few words what is to be found in the paper or the book.

On page 82 she refers to revising manuscripts. My own experience leads me to say, revise, revise and then revise again and perhaps still again and again.

On page 58, at the top of the page, she has both the words hypodermatic and hypodermic misspelled with the letters "er" instead of "o."

On page 96 in the fifth paragraph, first line, one "s" is omitted from the word passage. On page 108 there is a period missing after the word "hampered." In the second paragraph, unless she omitted a comma after the word "function," it is a bit difficult to get the full meaning out of this part of the paragraph.

I heartily agree with her entire attitude regarding English in the writing of medical papers.

**PRACTICAL LOCAL ANESTHESIA and Its Surgical Technic;** By Robert Emmett Farr, M. D., F. A. C. S., Minneapolis, Minn. Second Edition. Thoroughly revised. Illustrated with 268 Engravings and 16 plates. Lea and Febiger, Philadelphia, 1929.

Local anesthesia is becoming more and more popular and more and more practical. There are certain principles involved in local anesthesia which the surgeon should thoroughly understand: The distribution of the lymphatic tissues, nerves, the absorption, etc., are all points of importance. There are variable surgical factors in nearly every new case or new operation.

A comprehensive book pointing out the difficulties and the principle causes of failures are the fundamentals of a good book on this subject.

The author says "A more detailed account of the methods of obtaining anesthesia, controlling the patient's psyche and more clearly portraying surgical strategy, the exhibition of which is so absolutely essential to the successful use of local anesthesia, has been my objective." He further says that "It is my hope that in this presentation the requirements of surgeons whose minds are still in the plastic stage—anesthetically speaking—and those whose local anesthesia methods have not reached the stage of "crystallization," rather than those of the masters of the Art, may be served."

I do not hesitate to recommend this book to those who use local anesthesia or propose to use it.

**MEDICAL CLINICS OF NORTH AMERICA—**Chicago Number, March, 1930. Volume 13, Number 5. W. B. Saunders Company, Philadelphia and London.

There are a number of extremely interesting clinics in this volume. One of the most interesting is a report of a case of agranulocytopenia. Another interesting clinic is on bronchus carcinoma. As a matter of fact all the clinics are particularly interesting and it is perhaps unfair to say anyone is more interesting than another.

#### SPRING CONFERENCE, DALLAS SOUTHERN CLINICAL SOCIETY

A total registration of 1,012 was reached in the Spring Conference of the Dallas Southern Clinical Society at the Baker Hotel, Dallas, April 14th to 18th, inclusive. The visitors (exclusive of the guest speakers) came from ten southern states, ranging from New Mexico to Virginia. Guest speakers who appeared daily on the program included Drs. Logan Clendening, Kansas City; Geo. W. Crile, Cleveland; Vilray F. Blair, St. Louis; Francis M. Pottinger, Monrovia, Calif.; Frank Hinman, San Francisco; J.

L. Morse, Boston; C. L. Scudder, Boston; J. F. Barnhill, Indianapolis; Otto T. Schwartz, St. Louis; C. C. Stungis, Ann Arbor, Mich.; A. B. Moore, Rochester, Minn.

The general outline of the programs consisted of morning operative and diagnostic clinics in the allied hospitals—Baylor, St. Paul's Methodist, Parkland and Bradford Memorial; morning post-graduate hours at the Baker Hotel; Round Table luncheons at noon, in Medical and Surgical groups; general sessions in the afternoon, featuring the distinguished guests; and special events in the evenings. On Monday evening there was a meeting open to the general public; Tuesday, "Get Together" Smoker; Wednesday, combined Alumni and Clinic Dinner, unanimously pronounced an overwhelming success; Thursday, symposium on Syphilis. A golf tournament was enjoyed on Friday. Six different subjects were presented in moving pictures, several with "talkies." Ten scientific exhibits were on display, and all available space for commercial exhibits was occupied.

The 150 members of the Dallas Southern Clinical Society were led in the very successful 1930 Conference by the following officers: President, Dr. Oscar Marchman; vice-president, Dr. T. C. Gilbert; treasurer, Dr. G. E. Brereton; secretary, Dr. Curtice Rosser; director of clinics, Dr. J. Shirley Sweeney; other members of executive committee, Dr. H. Leslie Moore and Dr. J. M. Martin. Officers elected for the ensuing year are: president, Dr. J. M. Martin; vice-president, Dr. J. L. Goforth; treasurer, Dr. G. E. Brereton; secretary, Dr. M. O. Rouse; director of clinics, Dr. J. Shirley Sweeney; other members of executive committee, Drs. Marchman and Gilbert.

Plans are already under way for the 1931 Conference, which will probably be held in March.

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Ephedrol with Ethylmorphine Hydrochloride (Lilly) Not acceptable for N.N.R. The Council on Pharmacy and Chemistry reports that this is a shot gun cough mixture, relying on an opiate for its effect, and on the vogue of ephedrine for sales appeal. The Council declared Ephedrol with Ethylmorphine Hydrochloride unacceptable for New and Nonofficial Remedies because it is an unscientific mixture marketed under an unacceptable proprietary name with unwarranted therapeutic claims. (Jour. A.M.A. March 1, 1930, p. 634.)

New Treatments for Cancer. Hanson reports results closely resembling those described by Coffey and Humber, following the administration of thymus extract. Sokoloff reports similar results following the use of an extract of the suprarenal combined with iron. Charlton announces lytic effects on cancer cells following the administration of an extract of the omentum. The interest of the Coffey-Humber method, in its present stage of investigation, lies primarily in the fact that the available evidence seems to demonstrate a definite effect on cancer tissue as the result of injecting suprarenal extract into the body at points removed from the tumor. (Jour. A.M.A., March 1, 1930, p. 639.)

Causyth. A number of German journals have contained more or less laudatory reports regarding Causyth, but these are not considered to present acceptable evidence for the value of the preparation. According to the advertising, Causyth is a "cyclohexatrienpyridinsulphonacid, derived from Pyrazil the formula being  $C_6H_5N_2O_2S$ ". The product has not been considered by the Council on Pharmacy and Chemistry nor has the Mallinckrodt Chemical Works, which exploits it by way of its Canadian branch "Mallinckrodt Chemical Works Limited of Canada," requested the Council to report on it. Apparently no reports have been published in American medical journals which are confirmatory of the German propaganda. A pharmacologist who has given much attention to the action of salicylates and other drugs used in the treatment of rheumatism reviewed seven of the eight papers which were referred to in an advertising circular. He held the evidence to be unsatisfactory and uncritical and no justification for the extravagant claims of the advertising. (Jour. A.M.A., March 1, 1930, p. 656).

Jean Jacques Laboratories. For some time one I. Francis Purdy has been exploiting a piece of aphrodisiac quackery through the United States mails. Recently the postal authorities called a halt on the matter and, after a hearing debarred Purdy's business from the mails. Purdy's trade style was "Jean Jacques Laboratories" operating from 3104 Michigan Ave., Chicago. Purdy was selling through the mails a medicinal preparation that he called "Oxcentric" which was supposed to be a cure for lost sexual vigor and prostatic trouble in men of all ages. The preparation was put up for him by the Bierstedt Suppository Co. of Chicago. (Jour. A.M.A., March 8, 1930, p. 735.)

Tom Hayes. The Indecent Fraud of Archie T. Hay. Archie T. Hay who did business from 189 North Clark St., Chicago, under the trade name "Tom Hayes" has been selling on the mail order plan a salve or ointment called "T.N.T. (Tom's New Treatment)" for cases of "lost manhood." The nostrum sold by Archie T. Hay was prepared for him, according to the government authorities, by Stearns and White, Chicago. The Postmaster General declared the Tom Hayes business a fraud and debarred it from the mails. (Jour. A.M.A., March 8, 1930, p. 735.)

Tobacco Advertising Gone Mad. The modern tendency for advertisers of all kinds of merchandise to

drag the health angle into their advertisements is one of the most disturbing features in the modern advertising field. The medal for the most horrible example would seem to go to the American Tobacco Co. in the exploitation of Lucky Strike Cigarets and Cremo Cigars. The exploiters of Lucky Strike Cigarets have claimed that 18,000 physicians have testified that "the heat treatment, or toasting process, applied to tobacco previously aged and cured," is likely to free the cigaret "from irritation to the throat." There was also started a campaign "Reach for a Lucky instead of a Sweet," in which,—either directly or by implication—young women were urged to smoke Lucky Strike Cigarets when they a desire to eat candy, or pastry. Another branch of the American Tobacco Co's business has been carrying on an advertising campaign for "Cremo" cigars in which the public is led to believe that most cigars are hand-made and have their tips finished off with the saliva of the individual workman. Physicians will readily admit that many young women eat more candy than is good for them, but they will certainly not agree that the substitution of cigarets in such cases is in the interest of public health. Physicians may also admit that, theoretically, it is possible for disease to be transmitted by means of cigars. But when one considers the millions of cigars that are consumed annually and that it is extremely difficult to find in medical literature any real evidence of the transmission of pathological bacteria by means of cigars, the campaign of the Cremo concern stands condemned. (Jour. A.M.A., March 15, 1930, p. 810.)

FC-100. Recently, Pittsburgh papers reported that two officers and two employees of a Pittsburgh bank had been poisoned following the taking of a "remedy for a cold." Investigation disclosed that the nostrum these four men took was known as

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"FC-100", put on the market by the Food Chemistry Corporation of Pittsburgh, which has for its president P. S. Chambers. Presumably, this is the same as P. S. Chambers who was connected with the American Chemical Co., of Pittsburgh and the Research Laboratories of Pittsburgh, exploiters of AL-14, another nostrum exploited for the cure of colds. The Food Chemistry Corporation is today circularizing bank presidents and suggesting, by implication, that these bank executives purchase FC-100 for themselves and their employees. From an examination made by the A.M.A. Chemical Laboratory it may be concluded that the specimens of FC-100 examined consisted essentially of an effervescent mixture consisting of citric acid, potassium and sodium bicarbonate, along with traces of calcium and magnesium, and an overdose of an arsenic compound. Here, as in the case of AL-14, \$2 was charged for twelve tubes containing a few cents' worth of citric acid and baking soda, put out under the claim that the preparation is "not a drug" and that it is quickly effective in curing ninety per cent of common colds! (Journ. A.M.A., March 29, 1930, p. 1010).

The Female Sex Hormone. At the thirteenth International Congress of Physiology in Boston, held in August, 1929, E. A. Doisy announced for the first time the isolation of the female sex hormone in crystalline form. Subsequently, A. Butenandt announced that he, too, had isolated the hormone of the female sex glands in chemically pure crystallized form. In an article describing the product, Butenandt completely ignores the Doisy announcement. Butenandt points out that the substance is free from nitrogen and sulphur, and that it has no connection with protein substances and carbohydrates. In his opinion a chemical analysis may make it possible to produce the hormone synthetically. As might have been anticipated, the German investigator promptly conferred on his product a trade name controlled through a German manufacturer. Doisy, aided by the Council on Pharmacy and Chemistry, will no doubt choose a scientific name suitable to the nature of the product and to American conditions. (Journ. A.M.A., February 1, 1930, p. 341).

Vigantol Not Acceptable for N.N.R. When reports of experimental clinical studies made it apparent that irradiated ergosterol preparations would be offered for therapeutic use, the Council on Pharmacy and Chemistry undertook to select a name for this vitamin D bearing product. The Council did this so that products of this kind might be marketed under a single name and thus the confusion avoided under a multiplicity of names. The Council adopted "Viosterol" as the New and Nonofficial Remedies name for irradiated ergosterol and the name "Viosterol in oil 100 D" to designate a preparation containing the substance dissolved in oil and having one hundred times the vitamin D potency of a standard cod liver oil. Four firms have made their products acceptable under the Council name for inclusion in New and Nonofficial Remedies. The Winthrop Chemical Co. is offering to physicians of the United States a brand of viosterol in oil 100 D under the proprietary name "Vigantol." The Council declared "Vigantol" unacceptable for New and Nonofficial Remedies because the application of a proprietary name to a preparation of irradiated ergosterol is contrary to the best interest of the medical profession and of the public. (Journ. A.M.A., February 8, 1930, p. 410.)

EfeDroN Hart Nasal Jelly. EfeDroN Hart Nasal Jelly is another one of the ever increasing ephedrine proprietaries. The preparation is made by the Hart Drug Corporation, Miami, Florida. According to the label the formula is: Ephedrine hydrochloride Gr. 1; Chlorbutanol Gr. 2 $\frac{1}{4}$ ; Sodium Chloride Gr.

2 $\frac{1}{4}$ ; Menthol Gr. 3; Phenol Gr. 2; Oil of cinnamon Gr. 0.08; Jelly base q. s. ad drachms 5. The preparation has not been accepted for New and Nonofficial Remedies. While physicians' samples of this product have been liberally distributed, the carton is one which seemingly is addressed to the public as well. (Journ. A.M.A., February 8, 1930, p. 430).

Farastan not Acceptable for N.N.R. The Council on Pharmacy and Chemistry reports that Farastan is the name under which the Farastan Co., Philadelphia, markets a preparation of iodine and cinchophen claimed to be mono-ido-cinchopen. The preparation is recommended for use in "Arthritis, . . . Rheumatoid and Neurotic conditions." The council reports that there is no evidence that the routine use of cinchophen and iodide in fixed proportions (or in any proportions) is desirable or rational. Usually, the conditions that require cinchophen do not require the simultaneous administration of the iodides, and vice versa, and that it appears particularly undesirable and even dangerous to encourage the routine prescribing of cinchophen, which should be used only for short periods, with an iodide compound, which must be continued over long periods. The Council declared Farastan unacceptable for New and Nonofficial Remedies because it is an irrational preparation marketed with unwarranted therapeutic claims. (Journ. A.M.A., February 15, 1930, p. 484).

Antistreptococcus Serum Omitted from N.N.R. The Council on Pharmacy and Chemistry reports that for some years it has been questioning the value of antistreptococcus serum preparations. In 1928 the Council decided that unless new and favorable evidence became available, all streptococcus serum preparations would be omitted from New and Nonofficial Remedies with the close of 1929. Since no such new evidence has become available, the

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Washington, D. C.

Council has omitted all antistreptococcus serum preparations as follows: Antistreptococcic Serum (Gilliland Laboratories); Antistreptococcic Serum (Eli Lilly & Co.); Antistreptococcic Serum, Polyvalent (H. K. Mulford Co.); Antistreptococcic Serum (National Drug Co.); Antistreptococcic Serum (Parke, Davis & Co.); Antistreptococcic Serum-Squibb. (Jour. A.M.A., February 15, 1930, p. 484).

Udga Stomach Treatment. The formula of Udga is, apparently, secret—at least none of the advertising matter and follow-up letters give it. The Udga Medicine Co., which puts out this preparation is advertised as a mail-order treatment for stomach ulcer, gastritis and dyspepsia. From tests made in the A.M.A. Chemical Laboratory it appears that the preparation is similar in composition to the Pfunde's Stomach Tablets which we found to contain bismuth subnitrate, magnesium oxide and sodium carbonate. (Jour. A.M.A., February 15, 1930, p. 504).

In "The Journal of the American Medical Association, for October 12, 1929, it was announced that the Council on Pharmacy and Chemistry had established a Committee on Foods to examine food products and literature regarding their composition and usefulness—all subject to a series of rules, under which the Committee on Foods proposes to operate.

The purpose of the above statement is first, to acquaint the reader with the above movement in the interest of public health, and second, to advise that Mellin's Food and literature concerned have been considered and that Mellin's Food is accepted by the Committee on Foods and that the Mellin's Food Company is entitled to make use of the fact in advertising material and is permitted to use the "seal" of the Committee. Your attention is re-

quested to this insignia which is reproduced in the Mellin's Food Company's advertisement in this issue.

For a great many years accurate analyses of Mellin's Food and of Mellin's Food as prepared for the feeding of infants and as applied in the management of the diet in illnesses of children and adults have appeared regularly in this publication and in literature placed in the hands of physicians generally.

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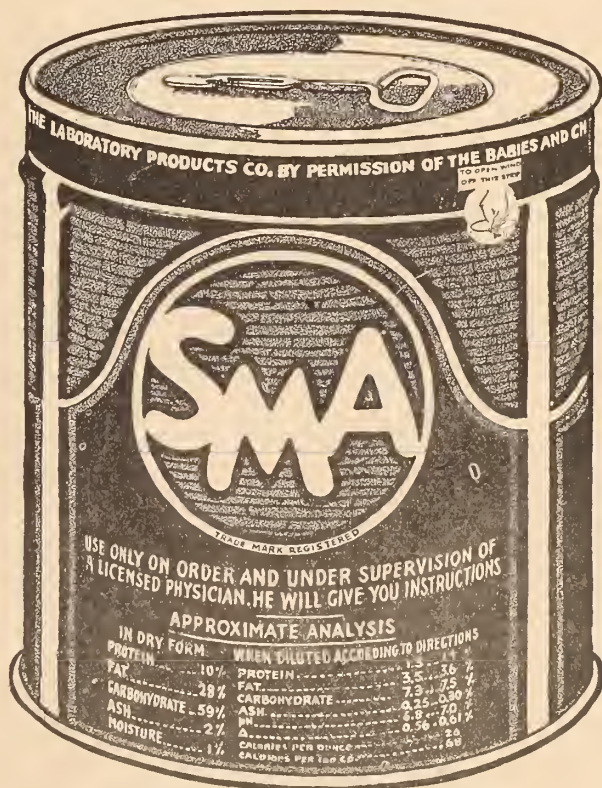
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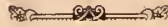
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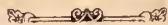




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Volume XIV.

SEPTEMBER, 1930

No. 9

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# Southwestern Medicine

PUBLISHED MONTHLY

Volume XIV.

SEPTEMBER, 1930

No. 9

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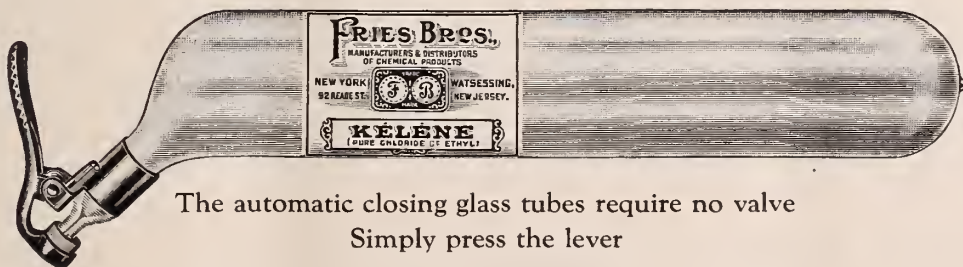
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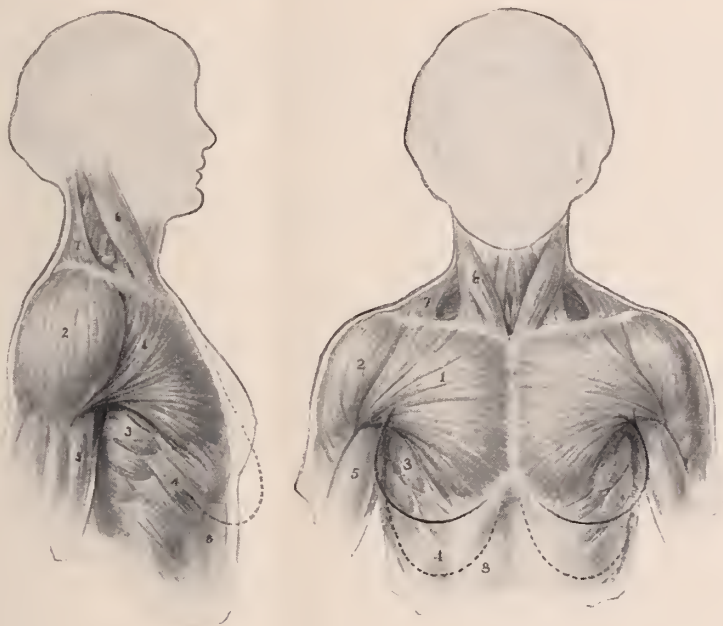
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Grated rind of ½ lemon .....	.....	.....	.....	.....	.....
3 tablespoons lemon juice or 1 tablespoon fruit acid	30	.....	.....	3	.....
½ gr. saccharin .....	.....	.....	.....	.....	.....
½ cup mashed banana ..	120	1.5	1	26	.....
6 tablespoons cream, whipped .....	85	2	34	2	.....
<b>Total</b>	<b>115</b>	<b>35</b>	<b>31</b>	<b>485</b>	
<b>One serving</b>	<b>2</b>	<b>6</b>	<b>5</b>	<b>81</b>	

Soak gelatine in cold water five minutes. Boil rind and water for two minutes, add gelatine and stir until dissolved. Add lemon flavoring and saccharin, strain and chill. When nearly set, fold in mashed banana and whipped cream, mold and chill until set.

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## SYMPOSIUM OF CANCER

(Summarizing the findings of the Joint Committee on Cancer of the Maricopa County Medical Society, St. Joseph's Hospital and the Good Samaritan Hospital, Phoenix, Ariz.)

This Committee was organized in February, 1929, following the Regional Conference of the American College of Surgeons, held in Phoenix, in that month. The personnel of the Committee, as originally constituted, is as follows:

W. Warner Watkins, Chairman.  
H. B. Gudgel, Vice-Chairman.  
Joseph M. Greer, Secretary.  
E. Payne Palmer.  
Willard Smith.  
George E. Goodrich.  
H. T. Bailey.  
H. P. Mills.  
Victor Randolph.  
Orville H. Brown.

This Committee was, thereafter, accepted by the County Medical Society and by each hospital Staff, as their standing Committee on Cancer.

This first report is a review of the cases of cancer treated in the two hospitals during the years 1928 and 1929, with a few of those treated early in 1930. It is simply an effort to record the methods of treatment, and does not pretend to offer any information about, or comments on, the end results which, obviously, must await further time.

Following this preliminary report, the Committee will attempt to evaluate the methods of treatment and to bring in recommendations which will tend to establish the advisable method in certain types, at least of malignant disease. This first report contains a list of the cancer cases treated in

the two hospitals during the two years mentioned, and papers by the following members of the Committee:

"Theories of the Direct and Indirect Causes of Cancer and Principles of Treatment," by Dr. Orville H. Brown.

"Cancer in the Abdomen" (Exclusive of the Pelvis), by Dr. H. B. Gudgel.

"Cancer in Accessible Locations," by Dr. Joseph M. Greer.

"Uterine Cancer," by Dr. George E. Goodrich.

"Cancer of the Breast" by Dr. E. Payne Palmer.

## SUMMARY OF CASES OF CANCER TREATED AT THE TWO PHOENIX HOSPITALS DURING THE YEARS 1928 AND 1929

### CANCER OF THE CERVIX AND UTERUS 38 Cases

SJ—16149, 3-21-29. Mrs. M. G. H. (Palmer). M. 32 irreg. bleeding 3 mos. Third deg. involvement cervix and l. parametrium. Given 3250 mg.-hrs. radium and full course of x-ray. No visible lesion one year later.

SJ—16453, 12-3-29. Mrs. N. M. (Palmer). Hysterectomy in Apr., 1929, for fibroids; malign. lesion in vaginal scar. 800 Mg-hrs. radium to scar; in April, 1930, ulcer still present (radium?).

SJ—18226, 1-13-30. Mrs. G. P. (Stroud). Second deg. involvement of cervical lip; panhysterectomy; path. report of adenocarcinoma.

SJ—17269, 7-23-29. Mrs. E. W. (Patterson). Early carc. of cervix. Hysterectomy. Path. report, probably early carcinoma.

SJ—16181, 3-20-29. A. T. (Palmer). S., age 38. Apparently first stage carcinoma of cervix; vaginal hysterectomy. Path. report, no malign. found.

SJ—18336, 12-15-29. V. R. (Stroud). Orange sized growth in cervix. apparently inoperable carcinoma. Palliative cauterization.

SJ—16135, 3-8-29. Mrs. M. O. (Ploussard). Col. M., age 43. Biopsy of cervix, non-malignant. After leaving hospital another section showed carcinoma. Cauterized with Percy cautery.



SJ—18558, 1-1-30. Mrs. D. K. (Shupe). Large, hard cervix, bleeding; amputation above growth. Path. report, sq. cell carcinoma. Death in May, 1930, from generalized carcinoma (autopsy).

SJ—15572, 1-24-29. Mrs. V. S. (Palmer). Second deg. squamous cell carcinoma of cervix. Amputation with endotherm knife followed immediately with radium, and then full series of x-ray.

SJ—17340, 7-31-29. Mrs. L. C. (Franklin). Age 52, tumor in uterine body thought to be fibroid. Hysterectomy. Path. report, carcinoma in cervix.

SJ—15354, 12-19-28. Mrs. S. J. (Shields). Age 47; Operation in California in October; Inoperable conditions found. Entered for palliative treatment with isamin blue.

SJ—15475, Jan., 1929. Mrs. C. M. (Goodrich). In course of urological examination, early carcinoma of cervix found. 3500 mg.-hrs. radium given.

SJ—17305, D. R. (Patterson). M., age 56; recurrence of carcinoma after operation; given x-ray preparatory to radium. Did not remain for radium treatment. In August and September given second x-ray series.

SJ—15888, 2-26-29. Mrs. V. C. (Palmer). Third deg. involvement though claims to have had symptoms only two weeks. Full course x-ray; then 3250 mg.-hrs. of radium. Later another series of x-ray in Albuquerque, where exploratory operation showed conditions good.

SJ—17705, 9-19-29. Mrs. O. W. (Milloy). In March, 1927, treated at another hospital for third deg. carcinoma, with radium and x-ray. Comes now in terminal stage. Autopsy, multiple metastases in abdomen and liver.

SJ—16579, 2-7-29. Mrs. J. L. (Shields). Seen in January; third degree involvement, given x-ray. Enters now for treatment with colloidal metals as palliative. In April, 1929, given radium and x-ray as palliation.

SJ—14779, 10-27-28. Mrs. G. H. (Dysart). Advanced third degree. X-rays outside, radium in hospital, 3600 mg.-hrs. In Jan., 1929, marked improvement; second series of x-rays. Hopeless case.

SJ—17904, Oct., 1929. Mrs. L. H. (Watkins). First stage carcinoma of cervix, 3150 Mg.-hrs. radium, followed by x-ray.

SJ—18218, Dec., 1929. A. F. (Watkins). Advanced third degree carcinoma. 2000 mg.-hrs. radium, full series of x-ray.

SJ—18240, 12-26-29. Mrs. B. (Mills). Second deg. sq. cell carcinoma of cervix. 2000 Mg.-hrs. radium. Full series of x-ray.

SJ—13108, 2-14-28. Miss N. C. (Palmer). In Dec., 1927, third deg. carcinoma of cervix in 30 yr. old woman (single). X-ray. Now comes for radium in hospital for palliation in hopeless case. X-ray in April again. Died some months later.

SJ—16258x, 6-27-29. M. L. (Woodman). Third deg. carcinoma of cervix. 2000 mg.-hrs. radium, with full series of x-ray. Died Jan., 1930.

SJ—15333, 12-28-29. F. W. (Vivian). Has had radium for carcinoma of cervix; recurrence; destroyed by actual cautery, with full series of x-ray following.

SJ—15539, 1-8-29. Mrs. P. H. (Moeur). In Aug., 28, adv. third deg. carcinoma of cervix. Treated by x-ray then 3000 mg.-hrs. at G. S. Hosp. Now in St. Jos. Hosp. for x-ray palliative. Died March, 1929.

GS—5230, 5-3-29. Mrs. S. P. (Smith). Hysterectomy for fibroids; path. exam. showed sarcoma. Given x-ray treatment.

GS—4615, 12-11-28. Mrs. J. G. (Goodrich). Has had subtotal hysterectomy for condition not supposed to be malignant; recurrence in stump. 1250 mg.-hrs. of radium to lesion.

GS—5090, 2-16-29. Mrs. S. S. W. (Greer). Supravaginal for fibroids; carcinoma in stump. 3300 mg.-hrs. of radium, followed by full dose of x-ray.

GS—7317, 12-2-29. Mrs. H. B. (Shupe). Carcinoma of cervix; hysterectomy; path. report, adenocarcinoma.

GS—3894, 9-10-28. Mrs. L. N. (Vivian). Papillary carcinoma of body of uterus; hysterectomy; death six days later.

GS—6267, 7-12-29. Mrs. V. E. (Watkins). Adv. second deg. carcinoma of cervix and body. Preliminary x-ray; 3100 mg.-hrs. radium. Good condition in July, 1930.

GS—....., 9-18-29. Mrs. N. O. (Watkins). First stage cervical carcinoma. 3000 mg.-hrs. radium; no x-ray.

GS—6126 6-24-29. Mrs. S. G. (Mills). Large papillary growth on cervix; 2800 mg.-hrs. of radium; full course of x-ray; second series of x-ray in December; in June, 1930, radium to uterine body.

GS—4213, 11-24-28. Mrs. M. P. (Stroud). Carcinoma of cervix; cervix amputated and area cauterized.

GS—7738, 1-20-30. Mrs. R. L. (Woodman). M., age 34, adv. tuberculosis; third degree carcinoma of cervix, squ. cell. 3100 mg.-hrs. radium; did not return for x-ray.

GS—4300, 11-5-29. Mrs. C. M. (Brockway). Third deg. carcinoma extending upon vaginal vault. Full course of x-ray; 2000 mg.-hrs. of radium; could not find cervical canal.

GS—4295, Nov., 1929. Mrs. G. S. (Palmer). In March, 1926, when operating for appendicitis, advanced carcinoma of uterus found. 3000 mg.-hrs. of radium given then, with full course of x-ray. Now comes with some suspicion of induration in cervical stump; 1250 mg.-hrs. radium given to stump.

GS—5172, 2-21-29. Mrs. N. H. (Palmer). Cured in 1928 for bleeding; recurrence in Jan., 1929, and exam. shows carcinoma. Full course of x-ray followed by 3400 mg.-hrs. of radium. In Sept., 1929, no sign of tumor or induration.

GS—5975, 6-6-29. Mrs. M. S. (Thomas). Persistent endocervicitis which does not yield to treatment; treated as carcinoma, without biopsy. 3000 mg.-hrs. of radium and full series of x-ray. In March, 1930, condition entirely satisfactory.

GS—3116, 5-21-28. Mrs. McC. (Ploussard). Terminal carcinoma; no treatment. Died.

## CANCER IN PELVIC ORGANS OTHER THAN UTERUS

### (Ovaries, Bladder, Prostate, Rectum) 21 Cases.

GS—4075, 10-6-28. Mrs. L. D. (McIntyre). Young woman with ovarian cysts; operated; recurrence; x-ray treatments. Died.

SJ—16046, 2-23-29. Mrs. J. T. (Sweek). Adenocarcinoma ovary; partial removal; x-ray treatments. Died, June, 1929.

SJ—14777, Mch., 1930. Mrs. G. A. P. (Ploussard). Operated Oct., 1928 for cyst-adenocarcinoma of ovary; returned March, 1930, with pelvic mass; exploratory; sent for x-ray treatment. Died.

SJ—17541, 8-27-29. M. K. (Goodrich). Subtotal hysterectomy in Aug., 1929; large multilocular cyst; path. report non-malignant. Recurred and operated in Dec., 1929; general pelvic and abdominal carcinoma.

SJ—17334, 7-31-29. Mrs. K. F. (Sweek). Ovariectomy, suspected carcinoma; path. report carcinoma in early stage.

GS—6685, 9-10-29. Mrs. H. S. (Smith). Inoperable carcinoma of ovary and adnexa. Died month later.

SJ—13185, 3-7-28. Miss A. M. (Patterson). Cystadenoma of ovary.

SJ—16571, 4-22-29. Mrs. J. F. (Palmer). M., age 44; tumor of ovary removed; adenocarcinoma.

SJ—15166, 12-14-28. Mrs. M. H. (Shields). In Nov., 1927 had inoper. carc. of colon, uterus and ileum; colostomy; enters now for isamin-blue palliative treatment. Died Jan., 1929.

SJ—15446, 12-25-28. G. W. S. (Vivian). M., age 57; enl. prostate. Second entry Jan. 3, 1929, diagnosis of carcinoma of prostate. No operative chart or tissue report.

SJ—17673, 9-11-29. S. R. (Thayer). W., age 74; operated for fibroids; found inoperable carcinoma of bladder. Died month later.

SJ—18032, 10-6-29. L. S. (Patterson). M., age 53, adv. carc. of prostate and bladder. Died.

SJ—18714, 12-17-29. J. B. (Sweet). W., age 61; carcinoma of prostate; removed; postoperative x-ray. Good condition in June, 1930.

SJ—13805, 65-8-28. J. H. B. (Pearson). Cancer of prostate with bone metastases; no treatment; died.

GS—2129, 1-6-28. A. S. (Brown). Cancer of prostate with metastases; autopsy elsewhere (Pueblo, Colo.).

GS—4386, 11-16-28. J. S. (Vivian). Cancer of bladder with ext. bone metastases; autopsy.

GS—3188, 5-30-28. S. S. (Vivian). Carcinoma of bladder; no data in records confirming this diagnosis.

GS—4282, 11-2-28. L. L. F. (Vivian). Cancer of bladder; biopsy.

SJ—14372, 8-30-28. H. R. (Vivian). Cancer of prostate; punch specimen. No record of treatment.

SJ—14567, 9-18-28. W. J. H. (Vivian). Carcinoma arising from pelvis; colostomy; died Oct., 1928; no autopsy.

GS—5813, 5-13-29. A. E. H. (Goodrich). Carcinoma of rectum; three stage Kraske; good condition in July, 1930.

## CANCER IN THE ABDOMEN OTHER THAN UTERUS AND PELVIS

### 29 Cases.

SJ—17039, 5-6-29. (Ellis). S., age 55, carcinoma of sigmoid. No operation.

SJ—15574, 1-7-29. J. C. C. (Palmer). Carcinoma descending colon; cecostomy; resection; died.

SJ—13890. Mrs. K. M. (Bannister). M., age 58, loss of wt., constipation, pain, mass in culdesac, x-ray; exploratory; inoper. carc. of sigmoid.

SJ—17067, 7-2-29. Mrs. L. F. (Fournier). Age 47, pain and mass in rt. side, constipation; lesion in splenic flexure; colostomy.

SJ—16404, 4-3-29. A. F. (Greer). Cancer of stomach. Died April 23.

SJ—15870, 2-5-29. Mrs. M. T. (Sult). Carcinoma of stomach by x-ray. Died Feb. 28.

SJ—13397 11-24-28. Mrs. E. C. (Sult). Ext. carc. of stomach; palliative x-ray treatment; autopsy confirms.

SJ—15819, 2-16-29. M. L. (McCall). Carc. of stomach by x-ray. Died Feb. 22.

SJ—14983, 11-16-28. M. T. (Tuthill). S., age 38; symptoms for four years; x-ray diagnosis. Operation, hard irregular mass at pylorus; posterior gastro-enterostomy.

SJ—13687, 5-21-28. I. Q. (Brockway). Cancer of pylorus (x-ray).

GS—4136. H. C. (Goodrich). Carcinoma of stomach; posterior gastro-enterostomy.

SJ—14775, 9-24-28. T. W. P. (Vivian). M., age 52; diagnosis of carcinoma of stomach noted; no

symptoms noted to support; dyspnea, cyanosis, anasarca, rapid heart; no x-ray.

SJ—13840, 6-11-28. C. Y. (Milloy). Difficulty in swallowing; x-ray negative. Autopsy showed advanced carcinoma of fundus of stomach.

GS—7472, 12-20-29. J. T. W. (Gatterdam). Carcinoma of stomach; no x-ray or other evidence on record to substantiate.

GS—5993, 6-6-29. Mrs. M. T. (Shupe). Exploratory; cancer stomach involving liver; died June 19.

GS—7269, 11-23-29. Mrs. J. M. (Goodrich). Carcinoma of stomach (x-ray); resection; died Nov. 28.

GS—5255, 3-4-29. Mrs. R. G. (?) Adenocarcinoma of kidney; nephrectomy.

SJ—13360, 4-5-28. C. K. (Woodman). Carcinoma of liver. Died Apr. 9; no autopsy.

GS—5624, 4-29-29. C. H. S. (C. B. Palmer). Jaundice; nosebleed; diag. cancer of liver; died May 1; no autopsy.

GS—5105, 2-12-29. C. K. (Ellis). Mass in liver region; diagnosis, cancer of liver; died Feb. 15; no autopsy.

GS—5147, 2-18-29. L. C. (Hughes). Enlarged liver; ascites; diagnosis cancer of liver; no autopsy.

GS3944, 9-18-29. G. T. (Vivian). Enlarged liver, icterus; diagnosis, cancer of liver; not confirmed.

GS—7353, 12-6-28. Mrs. W. S. (Wilkinson). Diagnosis cancer of gall bladder; history and x-ray indicates serious pathology in bile tract; no operation.

SJ—14086, 7-11-28. Mrs. H. K. F. (Drane). Diagnosis cancer of the liver; no x-ray or autopsy.

SJ—17933, 10-25-29. K. F. (Barlow). M., age 59; hard mass in gall bladder area; exploratory; biopsy; path. report fibrous tissue; died; no autopsy; final diagnosis, carcinoma of gall bladder.

GS—4451, 12-5-28. R. A. H. (Felch). Cancer of urinary and gall-bladder systems; no recorded findings to confirm.

GS—7483, 12-21-29. J. C. P. (Little). Thyroid tumor removed in August, 1829; now has mass in lower left abdomen; another in inguinal region. No operation.

GS—6266, 7-12-29. Mrs. N. W. C. (Hicks). Cancer in abdomen; tuberculosis; diagnosis of cancer not confirmed by records.

## CANCER OF THE BREAST

### 18 Cases

SJ—17055 1-18-30. Mrs. N. B. (Hughes). Carcinoma en cuirass in terminal stage; has been given two series of x-ray; no benefit; died day of entrance.

SJ—17420, 8-15-29. Mrs. T. B. (Palmer). W., age 69; carcinoma right breast; radical operation; path. report, Paget's.

SJ—16889, 5-27-29. Mrs. E. T. (Palmer). Lump in L. breast for two years; borderline; preoperative x-ray; radical with electrotome.

SJ—13892, 6-19-28. Mrs. C. F. (Brockway). Age 70; cancer of breast with metastases to lung and pleura; no treatment.

SJ—14823 10-26-28. K. D. (Craig). Age 34; lump in breast for 2 mos.; Halstead resection; alveolar carcinoma with gland involv. Postoperative x-ray; early in 1930 other breast removed by Dr. Dysart for cancer.

SJ—15628, 1-29-29. Mrs. L. F. (Palmer). Tumor in R. breast 3 mos. Removed and sectioned; path. report, adenofibroma.

SJ—14016, 7-1-28. Mrs. C. S. (Vivian). Lump in breast; Halstead resection; path. report adenocarcinoma; postoperative x-ray; early in 1930 recurrence in scar treated by x-ray.

SJ—18254, 11-29-29. Mrs. S. L. (Palmer). Tu-



mor in upper and external quadrant, firm, fixed to skin and muscle. Preoperative x-ray and Rodman operation; adenocarcinoma; postoperative x-ray advised.

SJ—18880, 1-30-30. Mrs. S. M. (Palmer). Firm, nodular growth in L. breast; some gland involv. Rodman amputation; alveolar carcinoma with skin involvement; postoperative x-ray.

GS—5001 1-30-29. Miss R. B. (Smith). Lump in L. breast; radical; path. report non-malignant; postoperative x-ray.

GS—7049, 10-29-29. Mrs. S. B. (Goodrich). Lump in R. breast; radical; path. report carcinoma; postoperative x-ray.

GS—4619, 12-12-28. Mrs. L. W. (Tuthill). Lump in L. breast; preoperative x-ray; Halstead amputation.

GS—4343, 1-11-28. Mrs. F. S. (Goodrich). Lump in R. breast for 3 yrs. Radical amputation; adenocarcinoma. Recurrence in Nov., 1929 in axilla and scar; x-ray treatments.

GS— Nov., 1929. Mrs. V. S. B. (Goodrich). Breast amputation for carcinoma. Postoperative x-ray.

GS—3720, 8-16-28. Miss L. K. (Tuthill). Lump in L. breast for 3 yrs. Nodule removed and sectioned, showing adenocarcinoma; radical amputation.

GS—6033, 6-12-29. H. E. (?) Small nodule removed from breast and sectioned; non-malignant.

GS—6871, 10-8-29. Miss E. R. (Brown). Breast removed in St. Louis a year ago; now has extensive bone metastases; palliative x-ray.

GS—2768, Apr., 1928. Mrs. K. R. (Pearson). Tumor first appeared in May, 1927; axillary glands involved; breast removed; scirrhus carcinoma.

#### MALIGNANCIES IN ACCESSIBLE LOCATIONS 19 Cases.

SJ—14443, 9-9-28. C. E. (Palmer). Swelling on forehead where struck 2 mos. ago. Preoperative x-ray; partial removal; path. report endothelioma; died Nov., 1928.

SJ—13986, 4-27-28. T. B. H. (Craig). Diagnosis of sarcomatosis of lower extremities; record not definite.

SJ—14244, 8-8-29. J. H. (Dysart). Carcinoma glans penis; amputation; path. report squamous cell carcinoma; postoperative x-ray.

GS—6697, 9-12-29. C. A. (Shupe). Tumor L. axilla; operative removal; path. report, round cell sarcoma; autopsy shows rib involvement.

GS—6882, 10-9-29. C. R. (Shupe). Tumor under L. ear, diagnosis carcinoma; removed; path. report inflammatory.

GS—4299, 11-5-28. C. F. G. (Hawley). Cancer of lip. No treatment.

GS—6756, Aug., 1929. Mrs. R. C. M. (Watkins). Carcinoma about orbit; x-ray treatment; enucleation of eye (Dr. Schwartz). Well in May, 1930.

GS—4015, Nov., 1929. Mrs. C. G. D. (Watkins). Electrosurgical removal of old epithelioma under eye in connection with x-ray and radium treatment.

GS—2575, Mch., 1928. S. T. H. (Tuthill). Removal of pinna with cautery knife for carcinoma; x-ray treatment.

GS—2192, S. L. G. (Sweek). Tumor right side of neck removed Sept., 1927; adenocarcinoma; x-ray treatments; recurrence; this time for second removal and radiation; later third operation in St. J. (Apr., 1928). Died in 1929.

SJ—18153, 11-26-29. W. I. B. (Thomas). Degenerated mole on back removed in 1928 by x-ray, apparently successful; now comes with diagnosis

of metastases in internal organs; died in hospital; not certain of diagnosis.

SJ—16694. L. S. W. (Palmer). Cancer lower lip; excision and gland removal; postoperative x-ray.

SJ—15675, 5-12-29. J. W. (Palmer). Squamous cell carc. lower lip; excision and gland removal; postoperative x-ray.

SJ—17215, 12-12-29. M. C. B. (Palmer). Cancer of lower lip developing on lupus; electrosurgical removal; x-ray; recurrence; caustic paste in Los Angeles; second entry for repair of paste damage to lip.

SJ—15060, 12-2-28. W. C. (Vivian). Cancer of foreskin; excision with electrotome; squamous cell carcinoma.

SJ—17235, 7-8-29. N. D. (Ploussard). Adv. carcinoma of hand in old man; amputation in mid forearm. Squamous cell carcinoma.

SJ—14571, 10-1-28. M. W. (Brockway). Growth size of egg removed; does not state where; path. report basal cell carcinoma.

SJ—14472, 9-18-29. M. J. (Ploussard). Old Bartholin gland infection; labiae thickened; tissue removed; squamous cell carcinoma.

SJ—16231, 3-30-29. H. C. P. (Dysart). Carcinoma of tongue; radium; excision; gland dissection; x-ray; died in summer of 1929.

#### THEORIES OF THE DIRECT AND INDIRECT CAUSES OF CANCER

##### and PRINCIPLES OF TREATMENT

ORVILLE HARRY BROWN, M. D., Ph. D.  
Phoenix, Ariz.

The earliest medical writings describe cancer. Hippocrates collected many writings on the subject. At that time it was regarded as a humoral disorder, either deficient or excessive amounts of blood, mucus, bile, etc. As would be expected, the term cancer was applied to swellings and growths now known to be merely inflammation.

History records that Democedes (520 B. C.) cured Atossa, wife of Darius Hystaspis, of breast cancer. Celsus removed the breasts for cancer and advised against removal of the pectoralis major.

Galen (131-203 A. D.) used the humoral pathology theory of cancer by saying that it developed from a concentration of black bile; suppression of the menses and hemorrhoids prevented discharge of black bile and led to cancer.

These early writers recognized that diet might play a part in cancer and recommended a vegetable diet for cancer patients and one writer absolutely forbade the eating of walnuts.

An interesting observation is that Leonides of Alexandria (180 A. D.) described radical operation for breast cancer, cutting through healthy tissue with knife and cautery, approaching closely modern technic.

For a thousand years throughout the Dark

Ages the development in cancer, as in other scientific works, was practically nil.

Lanfranchi (1290) again urged the radical operation for cancer, encouraging free bleeding of the affected parts. Henri De Mondeville and Guy de Chauliac excised cancers and used caustic arsenic on many.

Paracelsus, in the seventeenth century, advanced a theory that the causes of cancer were mineral salts in the blood and that the tumor was a collection of the salts of the blood attempting to be eliminated from the body.

Sennert of Prag, and Lusitanus of Lisbon, in the seventeenth century, advanced the theory that cancer was contagious.

DeDran, in the eighteenth century, first advanced the theory that "cancer lymph" getting through adjacent nodes might contaminate the entire lymph chain.

Morgani, in the eighteenth century, established pathologic anatomy and advanced the knowledge of tumors, separating many benign from malignant tumors.

Peyrilhe advanced cancer research, in the latter part of the eighteenth century, by a notable essay on "What is Cancer?" He discussed the origin of the tumor, the nature of the disease, the manner of growth and the treatment. He thought there was a specific virus formed from the degeneration which was responsible for the cachexia.

Helmont and Ettmuller said, in the seventeenth century, that an excess of acid was believed to be the cause of cancer and it was treated by the use of alkalies.

About this time Stahl advanced the theory that stasis and thickening of the blood were responsible for the development of cancer.

Hoffman believed that cancer and other types of diseases followed from atony, stasis and abnormal fermentation of blood and lymph.

John Hunter recognized that cancer tissue grew by transplantation; i. e., by metastases.

In 1802 the Society for the Investigation of the Nature and Causes of Cancer was formed in London. It dissolved, however, in 1806, without having accomplished anything of note.

Bayle and Cayol advanced the theory of the constitutional nature of cancer.

Broussais early in the nineteenth century suggested that cancer comes from recurrent inflammation, and is only inflamed tissue.

Cruveilhier held that cancer is a malignant degeneration of tissue.

Raspail (1826) demonstrated that the growth of cancer was by a multiplication of cells.

J. Muller advanced the theory that cancer

came from certain cells known as germ cells capable of wild development distributed among normal cells.

Hannover believed that cancer cells circulated in the blood and produced metastases as pus cells produce pyemia.

Virchow supported the contention of Muller regarding cancer production. About the time of Virchow the theory that cancer came from fluid blastema became prevalent and there was much controversy over it. Rokotansky said cancer was a constitutional dyscrasia. Virchow wrongly advanced the theory that the mesoblastic cell was the essential source of cell cancer.

Through the work of Cruveilhier, He-mak, Thiersch, Meckle, Waldeyer, Recklinghausen, Koster and Carmalt it became established that the type of cancer depended upon the tissue from which it developed.

In 1877, Cohnheim formulated a doctrine that cancer arose mainly from isolated and generally embryologic cells and tissue rests lying within normal tissue.

Ewing says that the fact that cancer has been demonstrated to be a disease local in origin and that secondary tumors arise from cells transported from the primary tumor tends to disprove the theory of cancerous dyscrasia and certainly casts doubt upon the theories of parasitic causes of cancer; cellular pathology seems to be incapable of explaining the etiology of cancer; irritation, trauma and infections have seemed to be connected with the origin of cancer but their relation to it has not been fully recognized or explained.

The latter decade of the last century dealt with pathology of tumors, separation of varieties, elucidation of fine points in the histogenesis and discussion of the history of neoplasms.

The outstanding development of the early part of the twentieth century has been on tumors throughout the animal kingdom and the establishment of the theory that heredity plays a prominent part in at least certain animals.

There has been a tremendous amount of research work in the last thirty years upon cancer. Numerous phases of the subject have been attacked. A compilation of even the titles of the papers for this period would fill a fair sized volume. In going through the Index Medicus, looking for certain articles, I jotted down, for the year 1929, titles of the articles which appeared to have a bearing upon etiology and therapy of cancer. I also took a few of the more interesting titles from the years 1927 and 1928. I believe you will find them of great interest.



Titles for 1929 are: Alcoholism and Cancer; Arguments For and Against Contagion; Chronic Irritation as Cause of Cancer; Diet and Cancer; Cancer Due to Vitamin Deficiency; Electro-biologic Hypothesis; Experiments on Carcinogenic Agents in Mineral Oils; Ferment Theory; Relation of Nutrition to Cancer; Glycosuria and Cancer; Infectiousness of Cancer; Influence of Vitamin Insufficiency; Traumatic Cancer; Physiochemical Theory; Points in Etiology—Heredit, Contagion, Traumatism and Cicatrix; Specific Cancer Poison; Cancer Produced by Alcohol; Effects of Diets on Experimental Cancer; Alkalosis and Mal-Metabolism of Sugar in Cancer and Precancerous State; Cancer Following Burn; Cancer Following Roentgen Treatment of Lepers; Chemical Nature of Cancerigenic Agent; Chemico-physical Stability of Cancer; Function of Pineal Gland and Testicles in Relation to Nature and Pathogenesis of Cancer; Histologic Resemblance Between Regeneration of Epithelium and Development of Cancer; Infectious Origin of Cancer; Interpretation of Malignant Growth Based Upon Chemistry of Cell Division; Irritation, a Cause of Cancer; Irritation Theory and Cancer as Industrial Social Disease; Lymph Stasis Precursor of Cancer; Cancer is Disease of Reversion; Parasitic Genesis of Cancer; Post-traumatic Cancer; Relation of Reticulo-endothelial Tissue and Cancer; Relation Between Cancer Morbidity and Blood Types; Roentgen Cancer; Role of Common Bacteria and Cancer; Role of Suprarenal Cortex; Role of Surface Tension in Pathogenesis; Skin Regeneration and Cancer; Traumatic Cancer; Cancer in Two White Mice Following Infection with Gonococci and Spirochetes; Comparison of Tar Cancer and Inoculation Cancers; Effect of Cytotoxic Stimulation and Reticulo-endothelial Block on Inoculated Cancer; Effect of Filtrate of Normal Tissues on Development of Transplanted Cancer; Effect of Folliculin in Mouse Cancer; Effect of Castration in Development of Cancer in Mouse; Effects of Potassium Cyanide and also of Hydrocyanic Acid on Cancer Cultures; Hydrogen Ion Concentration in Malignant Tumors of Mice; Influence of Ingestion of Various Animal Tissues on Cancer Growth in Rats; Influence of Pancreatic Hormone Upon Rat Carcinoma; Inhibiting Effect of Injection of Cancer Emulsion on Flexner's Rat Cancer; Inhibition of Cancer Growth in Mice by Irradiated Ergosterol.

The following titles were chosen from many interesting ones for the years 1927 and 1928: Cancer and Salt; Cancer a Sequel of Syphilis or Neuro-arthritis; Cancerous Constitution; Cancer Death Rate Variations

in Relation to Combustion—products of fuel, topography and population; Capillary Electricity and Bacteria Antagonism as Factors in Cancer; Structure of Protein and Causes of Cancer Antagonism Between Relapsing Fever and Experimental Cancer in Mouse; Canceration of Tissues; Regeneration and Polarity as Factors in Animal and Plant Cancers; Bleumenthal's *Bacillus tumefaciens*; Cancer a Disease of Either Election or Ignorance; *Echinococcus* as Cause of Cancer; Milk Diet and Cancer; Pathological Currents and Cancer; Venninous Etiology of Cancer; Cancer Producing Power of Carbozal; Anemia the Cause of Cancer and Consumption; Pathological Conditions of Nerves, Psyche and Endocrine Glands, and Imbalance of Serum Salts as Influence in Systemic Predisposition to Cancer; Carbon Monoxide and Cancer Problem; Modern Civilization as Factor in Predisposition to Cancer; Potassium Salts in Relation to Cancer; Influence of Tobacco and Other Extracts Upon Epithelial Cell; Influence of Insufficient Diet Upon Tumor Recurrence and Growth in Rats and Mice, etc., etc.

These are but a small per cent of the articles which have appeared on cancer in the past three years. No one can say that science is not delving into the problems of cancer.

There has long been the idea that cancer was in some way depending upon senescence. Ewing, after careful statistical study, concluded that the chances of dying of cancer increases throughout life, probably because of exposure to cancerigenic agents and further because habits which may tend to cause cancer increase with age. He says also that the chances of dying of cancer is increasing mainly because people are living longer. It seems possible that increase of fibrosis and arteriosclerosis may be a contributing factor in the etiology of cancer. These same factors probably hold in other diseases such as pneumonia, the greatest cause of death in old age, therefore, it may be assumed that senility merely acts in preparing the soil and in rendering it a bit more actionable.

Freund and Kaminer have a theory that cancer develops because of the lack in the tissues of a lytic agent antagonistic to the growth of the cells. They have been able to show that cancer cells undergo lysis when mixed with normal serum and that serum of cancer patients does not produce lysis of the cancer cells. The lytic agent is more prevalent in the young than in the aged. They believe, further, that this lytic material is manufactured in the intestinal canal from fatty substances, especially from palmitin. In the cancerous individual the lytic princi-

pal is produced but something neutralizes it and prevents action upon cancer tissue.

Krebs and Kubowitz, however, tested this theory and found that cancer tissue grows equally well in the serum of the persons without cancer and those with cancer. Their conclusion is that when the cancer tissue is ground it is injured and, therefore, the cell may be dissolved by serum of the normal person.

Warburg proposes the theory that cancer is a result of an excessive amount of lactic acid in the tissue and it is found that malignant tissues have a very much higher per cent of lactic acid than do normal tissues. They have a perverted form of fermentation which produces such acid, instead of carbon dioxide, from carbohydrates. He thinks that if the carbohydrate and oxygen supply could both be cut off the cancer would die. He has demonstrated, however, that it is not enough to cut off either oxygen or carbohydrates.

Burrows advances the theory that cancer results from crowding of cells and stagnation of the circulation. Therefore, any agent which sets up a crowding in the tissue and a relative reduction in the blood supply may lead to cancer. He thinks that coal tar, x-ray and other known cancer producing agents probably act in this way. Burrows has also observed that cancer tissue contains high content of vitamin B but none of vitamin A. He thinks that the application of coal tar may help to produce cancer by the destruction of vitamin A.

Robert Burich advanced the theory that the development of malignancy on the part of benign tissue is a result of quantitative changes on the part of the surrounding tissue; therefore, it may not necessarily be the introduction of a new factor or agent into the tissue. His theory is a bit vague.

Erwin F. Smith holds that cancer is the result of an infectious process and says that the incidence of cancer in lower animals from parasitic worms is steadily increasing each year. He lays great stress upon the dangers from cockroaches, bed bugs, fleas, water bugs, meal worms, dirty raw vegetables, etc., in the production and dissemination of cancer. He also believes that heredity is an important factor. He says that it takes both environment and heredity to produce a cancer. He refers to cancer districts, streets and houses.

Professor Henry Hartman reports a number of instances in which cancer developed in successive occupants of certain houses and flats. He also refers to the instances of it in several members of one family, especially

husband and wife. He views cancer as an infectious disease.

Willy Meyer thinks parasites are one of the many cancer inciting factors but that they act because they produce cell death and that it is the chemical decomposition products of cells which stimulate the multiplication of other cells and result in cancer.

John A. Soper admits we do not know whether the cancer is contagious or not but he thinks it is going too far to recommend isolation and disinfection for fear that such a program would play into the hands of the quacks.

Sir John Bland-Sutton believes that cancer is parasitic in origin. He cites the instance of granuloma, tuberculoma, syphiloma and other like diseases to sustain the proposition.

Professor F. Blumenthal says that the question of contagion and parasites in cancer are not the same. He thinks that the parasites may be an exciting agent in cancer and finally produce inflammation and develop into cancer.

Ewing, in discussing the parasitic and other causes of cancer, says that it seems that there are as many types of malignant tumors as there are inflammatory processes and consequently there will be no specific parasite or other agent found as the cause of cancer.

Peyton Rous had a chicken tumor which was transmitted by the dried filtrate, and he believed that this supported the theory that cancer is caused by a parasite.

Erwin demonstrated *B. tumefaciens* in certain breast tumors.

Roussy believes that the infectious and cellular theories are not so far apart. He says that Nuzum has isolated a coccus from both human and mouse tumors which, when injected into animals, produces tumors.

Glover has isolated from a rat carcinoma, as well as from a human cancer, an organism which he thought to be specific for cancer. Inoculating animals with this organism produces typical growths.

Blumenthal produced a blister upon the surface of a cancer by means of sun rays and later obtained certain organisms from the blister which when inoculated into the animals produced tumors. He was of the opinion that he had discovered the cause of cancer. He produced a neoplasm by injecting spleen extract from cancerous rats.

Gye and Barnard believed that all malignant growths contained viable organisms. Their work has been proven to be faulty.

Carrel has long experimented with the growth of cancer cells in vitro and has come



to the conclusion that dying cells eliminate certain chemicals which he describes as "trephones," which have the property of increasing the multiplication of the neighboring cells.

William H. Welch thinks it is well to consider both heredity and environment in attempting to explain the causes of cancer.

J. A. Murray says that transplantation of cancer cells from animal to animal necessarily carries with it connective tissue cells but that invariably the connective tissue cell transplanted dies and the cancer cell forms upon a new stroma of connective tissue from the host. The cancer cells grow and multiply and it is impossible to tell whether it is the third or the three hundredth transplant, so consistent is the type of cell. As a rule, however, a cancer cannot be transmitted from one species to another with any degree of ease. The transplant is most successful if the animal is very young. Transplanting a tumor into a mouse in which it failed to grow renders the mouse less susceptible to subsequent transplants. There are tissue and racial specificities of cancer cells which should prevent their ready transplanting to other animals, other individuals, or even other parts of the same individual.

There has been a great deal written of late about the ability of tar to produce cancer. Percival Potts called attention to this a century and a half ago, when he observed that chimney sweeps were especially prone to cancer of the scrotum as a result of the local action of the soot.

Archibald Leitch discovered that mixing the soot with the secretions of the sebaceous glands is highly effective in producing cancer of the skin.

In 1775 Voltman and Halle described cancer of the anus and scrotum in workmen in lignite distillation plants. In Scotland many years before it had been observed that mineral oil distillation from shale produced an undue number of skin cancers in the workman. In Czechoslovakia, Silesia, France, the United States and England it has been observed that the workers in crude mineral oil have been found to have an undue number of cancers. In England also it has been found that the cotton spinners have a large number of cancers of the scrotum and anus from the soiling of the parts with the minute particles of mineral lubricating oil thrown off by the rapidly revolving spindles.

Leitch refers to the large number of cancers in England among the workmen in the distilleries and coal tar plants and patent fuels made from pitch.

Maxwell, a medical missionary in Kash-

mir, calls attention to the frequency of cancer in India among the natives due to the wearing of earthenware pots with burning charcoal under their robes. It seemed that the cicatrices and ulcers later developed into epitheliomata. Medical missionaries in the Far East have reported the betel cancer from the chewing of betel leaf, tobacco, areca nut and lime.

Leitch further calls attention to the large number of x-ray workers who have fallen victims to cancer of the hands as a result of continuous exposure to the unscreened rays.

Marie, Clunet and Raulot-Lapoint produced a sarcoma in a rat by exposing it frequently to the x-ray. The tumor came long after the exposures had been discontinued.

Leitch reports having produced cancer in animals by the application of weak arsenic solution and that arsenic workers are particularly prone to have cancer. He also says that aniline workers are prone to have cancer of the urinary bladder. It is Leitch's opinion that the frequency of cancer in the aged is due to the fact that it takes so many years for the cancerigenic agent to produce the growth. He says that old animals develop cancer no quicker than the young animals from the application of tar to the skin. He says that the cells may be removed from the effects of the carcinogenic agent for a long period of time and yet there may have been such an effect made upon the cells that cancer will develop.

W. Sampson Handley believes that chronic lymph obstruction has much to do with the changing of benign to malignant tissue. He reports a woman with elephantiasis who treated it by an electric light and within a few months developed dozens of epitheliomas over the leg.

Professor J. Maisin says that the tar, in order to produce a cancer, must be applied to the skin and not injected into it, and it is best to have it applied daily for a time and after two months rest apply it daily again. Under such treatment 60 to 70 per cent of the mice will develop cancer. A peculiar fact is that if mice are first injected with tar for four months and then are burned on the nape of the neck with the tar for a period of two months 70 per cent of them develop cancer.

Kayama and Leitch have shown that in a strain of animals susceptible to cancer of the gall bladder the introduction of aseptic pebbles into the gall bladder is likely to produce cancer of the gall bladder.

F. Bang has shown that a third degree burn produces cancer cicatrix provided the person or animal is susceptible to cancer.

Barlow and Bales found that radium pro-

duces skin cancer in animals susceptible to cancer. Cabazol used by Barlow and Bales produced skin cancer in one of thirty mice burned on the skin for a year.

Maud Syle, whose remarkable work on the heredity of cancer has been generally known, says that there are apparently two factors necessary to produce cancer: First, a susceptibility to the disease and, second, environment of the right kind and of the right degree. She says that a great deal of unwillingness to take heredity into consideration may be explained by the hopelessness of the cancer situation. She does say, however, that there are many points of encouragement in the heredity question. Resistance is as much a part of heredity as is susceptibility. A large number of persons are immune to cancer.

Charles Mayo thinks that both heredity and soil, both of which are susceptible to adverse influences, must be considered to establish the etiology of cancer.

In regard to the predisposing factors it seems as if we can speak a bit more authentically than we can about the direct etiology.

James Ewing blames chronic inflammation, alcohol, tobacco, bolting of hot, poorly masticated food, and trauma for a large per cent of cancers. He considers the neoplastic reaction of tissue cells to be an inflammatory process. He says: "A rational basis for the prevention of cancer lies in the fact that the major forms of the disease are due to some form of chronic irritation. It is a sane and profitable and yet tedious occupation that has long been pursued, to investigate these chronic irritations that lead to cancer." He says that pigmented moles should be removed early in order to prevent malignancy. Infectious antra should be treated in order to prevent cancer of the antrum. The public and dental profession should be acquainted with the dangers of pyorrhea, chronic infection of the mouth and adjoining cavities, syphilis, broken decayed teeth, badly fitting plates, sharp pipe stems, etc. He says that cancer of the lip is nearly always caused by irritation of tobacco; a prominent predisposing factor is seborrheic dermatitis. He believes circumcision would reduce the cancers in both the male and female. The cleanliness of the sex organs would reduce the cancer in these organs to a great extent. He thinks that cancer of the stomach may arise as much from inheritance of dietary habits as from any intrinsic tendency to cancer. He blames habitual over eating and gastritis for most of the gastric cancers. He says that cancer of the breast is probably produced by stagna-

tion in the ducts. He found one case with a cancer but two mm. in diameter and the cancer had developed about a duct which was distended with secretion.

Bagg produced mammary cancer in mice by taking away the young at birth, thus causing stagnation of milk in the ducts. This too was in a strain of mice in which cancer was of low incidence. It produced mammary cancer in 85 per cent of the animals. Ligation of the ducts of the breasts of one side tended to cause cancer to develop on that side more than on the other.

Adair says that in two hundred mammary cancers only eight per cent gave a history of absolutely normal location.

Adair and Ewing both say that an astonishing amount of inspissated or puriform material can be withdrawn from many cancerous breasts by the pump.

W. Sampson Handley thinks that pyorrhea, bad teeth and bad mouth hygiene in general are responsible for a large per cent of the cancers about that region.

Tyzzer demonstrated that massage of a cancer transplant greatly increased the number of metastases found in the lungs.

Francis Carter Wood says that the wide use of physical therapeutic methods by a group of more or less illiterate healers has frequently been responsible for a wide dissemination of cancer which might otherwise have been removed successfully.

L. C. Knox repeated the experiments of Tyzzer and found that massage greatly increased metastases.

Wood calls attention to the involuntary massage which may be given a cancer because of its location, as for example, a cancer of the tongue. He emphasises that the physician who makes an examination should always be extremely careful not to be responsible for the spreading of cancer tissues by manipulation.

Alexander Primrose calls attention to the importance of having nurses instructed as to this point.

John B. Garnett reports a case of a man who had one arm spiked by a baseball shoe. The wound received indifferent treatment for a great many months and later developed cancer. Another case was a woman of 50 years, who had a traumatic wound of the scalp. Four and one-half years, with indifferent treatment; it did not heal and at that time it had developed into a basal cell carcinoma.

He says many of his male patients with cancer of the face have said that they believed the cancer resulted from razor cuts. He also says it is common to see cancer de-



velop in the scars of past wounds and bones or on the ridge of chronic ulcers.

E. S. Clayton says cancer of the breast is preceded by a history of trauma more than by any other one disease.

Aaron Arkin says that he believes chronic irritation from smoke, dust or chemical agents may be responsible for the increasing number of bronchus cancer. To this he adds bronchiectasis, tuberculosis, syphilis, foreign bodies and influenza as predisposing factors. He also says that street, coal and stone dust, tobacco smoke and especially the exhaust from gasoline and oil engines may be important cancer causes because it is well known that coal tar products have a tendency to produce cancer. Eight of forty cases observed in the last seven years in persons who were employed in occupations necessitating extreme contact with gases, fumes, ducts, etc., developed cancer.

L. J. Hirschman and M. S. Rosenblatt report a colloid carcinoma of the rectum which followed a chronic infection of a long persisting and prolapsing internal hemorrhoid.

H. P. Charlton says it has been his privilege to see approximately 150 previously unstudied cases of carcinoma of the cervix and as one result of this clinical observation he is almost persuaded that no one of these cases would have occurred if the individual had been previously clean. He further says that he believes that the problem and solution of cervical carcinoma is locked up with the pathology and proper therapy of the inflamed cervix.

When it comes to the contemplation of the treatment of cancer we are just about as much at a loss as when dealing with the proper etiology of cancer.

Howard Lilienthal says that the temperament of the individual is of tremendous importance. It may be such as to keep him or her away from the doctor long after the tumor has been found. Then again the temperament may not permit the individual to have an operation when it is recommended and when it might be hopeful of doing good. It is highly necessary for both the physician and surgeon to study the temperament of the individual.

Saltzstein calls attention to the differences in opinions, the various judgments and the incompleteness of the treatment generally offered cancer patients even when they have reported with the early lesions. He calls attention to the fact that it is the older physicians who see most of the cancer patients and, hence, need the greatest amount of checking to see if the best treatments are being given. The young men, generally, and

some of the older men are apt to have a spirit of unwarranted pessimism.

Shore says a general study of 1000 cases of cancer with reference to the condition at time medical advice was sought, showed that 68 per cent of the patients were in the inoperable stage when advice was sought. It also showed that a far greater number of early cases would be detected if a routine and complete examination had been made when the patients first sought medical advice. Therefore, the educational need is not entirely with the public, but also with the medical profession.

Professor Claud Regaud says that one danger with medicinal treatment of cancer is that it is too easy to be used by the charlatans. The public will grasp at straws and the charlatan will take any straw science offers and by fallacious statements and promises make it look like a life-saver.

George H. Semken also calls attention to the importance of considering the psychology of the patient and the inadequacy of the treatment so often given the cancer patient. He says it would be better if we had cancer committees to whom a patient might go and obtain an unbiased and valuable judgment as to the method of treatment for his particular case.

E. S. Kilgore says that the San Francisco Cancer Committee has had the experience of receiving requests from outside for their combined advice on individual cases. The physicians consulting them feel that when the members of the committee fight out the question among themselves and give advice that it is most likely to be correct.

Lee writes: "Rehabilitation is an important factor in the successful treatment of cancer. Following operation, nature should be stimulated to develop a resistance against the disease by every means possible. Blood transfusions are frequently very valuable." Foreign proteins and toxins, e.g., Coley's toxin still have their place in certain cases.

Andre Crotti says in their cancer clinic the method of handling cancer cases has been as follows: "All superficial cancers are sent to the radiologist; carcinoma of the cervix is regarded as a superficial cancer and consequently treated with radium; carcinoma of the fundus is essentially a surgical case and is consequently treated surgically, i. e. by hysterectomy; carcinoma of the breast is essentially surgical; radiology is used as an adjunct after operation; all cases of deep seated cancer are surgical, if still operable; carcinoma of the gum is treated by radiation; in cancer of the tongue our results have been bad, no matter what method was chosen, radiation or surgery."

Robert Vierick says there are difficulties in the way of laying down general lines of treatment of tumors; even two tumors of the same organ differ in some important respects.

Bloodgood says the cure of cancer depends upon early recognition followed by immediate, complete, operation.

George H. Semken says that roentgen and radium treatments of cancer should not be attempted except by the experienced radiologists because there is too much uncertainty as to the reaction of the tissue to these agents and that radium and roentgen ray are still in the experimental stage. He further says that the radiologist should realize when his treatment is producing no beneficial effects and discontinue it before it has done damage which might make surgical measures impossible. He should not be slow in admitting with frankness and candor the numerous cases of complete failure, intense suffering, and severe damage that follow the radiation treatment. Cancer surgery has not reached the limits made possible by cancer study and the surgeon himself seems to be the weakest spot.

The surgeon has failed to realize from the start that in cancer work he faces a far different problem than he does in general surgery, and that he needs to view cancer surgery from a cancer angle. He must have the temperamental qualities that will fit him to do this work faithfully and well.

The outstanding points of weakness of the cancer surgeon have been "(1) his lack of contact with the progress in cancer research; (2) his imperfect evaluation of the degrees of malignancy; (3) his failure to follow through the natural regional metastases in each case; (4) his repeated failures to retrace the path of regional metastases so as to find small and silent primary tumors; and (5) his failure to interpret correctly the frequently associated inflammatory conditions."

He emphasizes particularly the danger of re-implantation of cancer tissue upon the fresh wound surface and that no cancer emboli should be pressed into the blood or lymph streams during the operation.

In order to be sure of successful operations he recommends that a standard operation be devised for each favorite site of cancer. He says it is inexcusable to have the thought of the cosmetic result or smoothness of wound-healing jeopardize the thoroughness of the operation. He recommends specialization in the cancer field so that each cancer patient may have a better primary operation and he thinks such a procedure would make operable many unoperable cases.

I quote from Semken: "A cancer surgeon needs to recognize the magnitude of the work to be done and needs to be prepared to do it well. He will not be disturbed by the length of time it takes or by the size of the field of operation."

Henry K. Pancoast calls attention to the variableness of the rapidity of metastases dependent upon the location and emphasizes that it is important that the surgeon familiarize himself with the facts. He further says that experience with the precancerous conditions on the part of cancer specialists will affect the removal of many precancerous lesions.

Professor Leon Berard says that endodermic cancer, that is those of the stomach, intestines, uterus, ovaries, kidneys, do not respond to the action of x-ray. On the contrary exodermic cancer, epitheliomata of the skin, mouth, pharynx, larynx, vagina, cervix, etc., are treated by physical agents more successfully than with the knife. He says that when lymph nodes are definitely malignant they should be removed by block dissection. It is well to combine irradiation with surgery in these cases. The breast should be left to the surgeon.

Morgan and Bradley say that the basis of irradiation therapy has been that the tumor tissue has been more easily destroyed than normal tissue. This is explained by the fact that young cells are more readily affected by the rays than are the more mature cells; but it is also possible to explain the beneficial effects of radiation as a stimulation of the tissue protective forces. They have made a change in their technique and instead of giving heavy doses of x-ray or radium they give it in smaller doses more frequently, with much better results. Neoplasms lying within ten cm. of the surface receive three minutes twice daily, or five minutes are given if two visits are impracticable. More deeply lying neoplasms are given ten minutes twice daily, the first from one direction, the second from the opposite direction. They say: "Not every case has responded as well as has been hoped, but the results, on the whole, have been most encouraging and in several even quite astonishing. It has seemed that our most surprising results were obtained in the treatment of cases which had previously proved to be unaffected by heavy doses."

Temple Fay says pain becomes an important factor in tumors situated about the head or neck. For control of the pain he recommends rhizotomy or section of the posterior roots involved. He reports a series of cases in which the results were most satisfactory.



Pfahler recommends electro-coagulation with roentgen ray treatment for epithelioma about the skin.

William L. Clark says that an electrothermic method should be used alone only in localized tumors of the type that do not tend to metastasize. The basal cell type, even though extensive, may often be successfully treated by dessiccation or coagulation.

Richard Vallack writes upon the use of diathermy in the cure of cancer growths and says that the following are considered: Certainty of eradication; minimal destruction of adjacent healthy tissue; minimal resultant scarring; minimal hemorrhage; minimal postoperative pain; minimal resultant shock; speed in operating.

Claude Regaud says: "Diathermo-coagulation by high frequency currents is tending to take important rank among procedures for the removal of cancer."

John Berton Carnette recommends, and W. Sampson Handley approves of, ethyl chloride freezing for the removal of biopsy specimens. He thinks that this tends to prevent lymph distribution of cancer tissue from the surgical procedure.

Lillenthal called attention to the action of the Coley toxin and says: "I have long been interested in the treatment of sarcoma by this means. My per cent of good results has been considerably greater than that claimed by Coley himself. I believe that in the future we shall have a better understanding of the use of foreign bodies of this type in the treatment of malignancy."

Along in 1911 there were a number of men who attempted to use colloidal suspensions of heavy metal in the treatment of malignancy and there was some thought in the minds of some of them that favorable results were obtained in a small number of the trials.

W. Blair Bell in 1920 revived the use of heavy metals and began using a colloidal lead after his own method of preparation. Professor Bell is not claiming that lead is a cure for cancer. As yet 80 per cent of his cases are uninfluenced. The remaining 20 per cent received more or less benefit. A few of the 20 per cent have remained free of evidence of cancer for three to five years. Practically all workmen with colloidal lead solutions testify that it is highly toxic and must be used carefully and in properly selected cases.

Waters, Colston and Gay used lead in conjunction with high voltage roentgen ray. Their conclusion is that they could not be convinced of the beneficial effect of colloidal lead and were inclined to attribute the transient but definite improvement occasionally

noted more to the roentgen ray treatments than to the lead.

Ullmann says: "I have seen sufficient action of lead on malignant tumors to warrant further trial." The lead augments the effect of radiation. He has seen shrinkage, liquefaction or disappearance of tumors. A quotation is as follows: "A very definite impression is that patients who have had lead treatment require, as a rule, much less morphine than untreated patients in the same condition. This was first noticed by visiting physicians and brought to my attention. As all patients receive irradiation, the reduction in pain may be due to this factor alone but the amount of radiation therapy is frequently so small that I attribute the alleviation of pain largely to the lead."

Soiland, Costolow and Meland have treated thirty-one patients and their final paragraph is: "Naturally we are disappointed in our results. That the treatment has a temporary good effect cannot be denied, but when viewed over a longer period of time, the results of the method are not encouraging. When the expense of the treatment is weighed against the possible ultimate good effects to the patient, it seems that the lead therapy, as used by us, is not the solution to the cancer problem."

Knox has treated seventy cases and thinks the colloidal lead was effective in prolonging the lives of certain patients. She says that a rare but an occasional permanent cure may be expected. In general a patient should be relatively young, not anemic, or cachectic or with extensive metastases in order to undertake the treatment. She says: "The morphology of the tumor is not a guide to the probability of its susceptibility to lead."

Schreiner and Wende have used colloidal lead and their conclusion is: "In our hands the lack of clinical improvement together with the severe anemias and asthenias produced by this form of treatment was cause enough for discontinuing the use of colloidal lead in the treatment of far advanced cancer."

One of the most interesting reports upon the treatment of cancer which it was my pleasure to study in the preparation of this talk was a posthumous report by Dr. Henry F. Harris upon the use of uranium through electroionization. He used several preparations of uranium all of which are discussed in the paper. He introduced them into the tumor through electrodes. Quoting from the paper: "No ill effect whatever is seen in the tissues following the treatment where properly given—there being at no time swelling, pain or tenderness, and, with the exception that all of the cells infiltrated with the ura-

nium ions disintegrate and disappear within a few days, not the slightest change can be observed under the microscope. Curiously no ill effects seem to follow the destruction of the mesoblastic cells, and they all regenerate in the course of some weeks. In this connection it may be noted that the treatment may be given directly to bone, likewise without any ill consequences. One of the most important phenomena observed following the treatment by uranium ions is that in cancers with extensive destruction of the soft parts the foul odors commonly emanating from such growths almost immediately disappear, the secretions rapidly dry up, and there slowly forms a covering over the diseased area of what looks like practically normal skin; should these unpleasant symptoms recur before the healing is completed, an occasional mild treatment will keep them in abeyance until this occurs.

"Many very large, rapidly growing cancers, which have resisted both radium and x-ray in the hands of some of the most competent men in the country, have been apparently cured, and likewise a number of chronic infections, with or without ulceration, have also rapidly yielded to the treatment—the effect in all cases being extremely rapid.

"Although the treatment has been given in 365 instances, and in several of the early cases as many as from 30 to 40 times to a single individual, in no instance has the slightest constitutional effect been observed."

#### SUMMARY

There is a growing feeling that cancer may be a peculiar sport process of inflammation. The inflammation may be the result of infection, irritation, trauma, chemicals, lack of blood supply, stasis of blood or lymph, accumulated secretions, perverted metabolism, etc.

The gradually accumulating evidence that chronic infection and irritation of one sort or another may be responsible for malignancy is sufficient, at least, to cause us to double our efforts to eradicate pathologic conditions wherever and whenever found, irrespective of presence or absence of symptoms and distress therefrom.

The profession is not wide awake to the importance of the early treatment of precancerous lesions and of the removal of precancerous tumors. Operations on cancerous lesions are done with too much optimism that the lesion is not cancerous; therefore, the operation lacks in being sufficiently radical.

Cancer surgery should become more of a

specialized surgery than it is. It is a heart wrecking type of work and those who are not particularly trained in it should be ready to relinquish the work to those who are.

Radiation is a specialty and those not in the specialty should not apply this form of therapy to cancer.

It is well recognized that certain tumors belong especially to the field of surgery and others to the field of radiology. There is a growing indication that electro-coagulation is particularly applicable to small, slow-growing, superficial lesions.

The influence of heredity should be recognized but it should not be allowed to be a depressing factor.

The use of lead as yet does not seem to be justified except in the hands of the experimentalist.

A most suggestive form of therapy is the introduction of uranium ions by means of electrodes.

There is a great future in the cancer fight for the work of a cancer committee such as that presenting the program tonight. They should educate themselves on all phases of the cancer problem and be ready to supply the information which they gather to any and all corners of the profession. The profession should feel free to use the committee as a consultant body.

A program to educate the public upon the cancer fight problem should be planned and executed as rapidly as possible.

The cancer problem is not nearly as black as was the great white plague problem twenty-five years ago. I predict that the same intelligent attack upon the problem as has been given to the tuberculosis problem in the last twenty-five years will see a decrease in the death rate from cancer comparable to the tuberculosis decrease in the last twenty-five years.

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Cancer of the Stomach. Ralph H. Chaney, M. D., Augusta, Ga., *Jour. of the Med. Assn. of Ga.*, June, 1930, p. 222.

This is a fairly detailed description of stomach cancer, covering various phases.

From the standpoint of diagnosis, any individual over forty years of age who comes with a complaint of dyspepsia, biliousness, or indigestion, should be suspected of cancer until it is proven absent. Likewise no case should be allowed to run along with a single examination following a persistent weight loss but should have frequent check up studies, by x-ray by gastric analyses, by examination of the stools for occult blood and by frequent checks of weight. The most valuable single aid in the diagnosis of gastric cancer is the findings by roentgen ray study. The characteristic cases show definite findings, ulcers having diameters of more than 2 cm. being malignant three times out of five.



## CANCER IN THE ABDOMEN (Exclusive of the Pelvis)

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In looking over the few history cards I can find no great fault in the medical and surgical treatment. We all, at least most of us, fall down in energy when it comes to writing the physical findings that are observed during our first few examinations. While most of these are faulty in stating the results of the examination, no doubt these were errors of omission rather than commission.

The diagnosis of abdominal disease cannot be considered a hit and run affair. The errors are frequent and, in many instances, constant and about on a par with those of us who think we know, and those who know. Be that as it may, the cases all require study and development. There are few instances that the parties come early in the disease, which, I assure you, does not assist you much in the cause of the complaint. The tendency is usually to think of the many probable other causes for the early symptoms and, consequently, the effect on the patient is that he has some dyspeptic affair and he continues the soda water and laxatives until certain symptoms, some months later, send him again to the physician. I am of the opinion in all stomach, liver and rectal cases in patients after forty that it is consistent with good judgment to have the patient return every 20 to 30 days for further examination and study. This is invaluable both to patient and physician.

Aside from rectal and prostatic malignancy there can be only doubts and conjectures. However, as usual, the cases come rather late in disease with more or less tumor or nodular formation. Pain, emaciation, anemia of a more or less degree, loss in weight, vitality and strength, anorexia, vomiting, the peculiar leathery skin, the sudden progressive constipation, urinary changes, hemorrhage, ascites and age of patient, all of which tend at once to arouse the suspicion of malignancy. Especially so if the history gives you progressive, downward tendency of the general physical condition over a period of months.

So, the history is of first import. The findings are merely location. The carcinomas are, for the most part, past middle life. The history of injury plays an important role in sarcomas.

We will try to give, from our more or less limited experience, some of the ordinary findings. Inasmuch as two or three find-

ings usually form the suspected diagnosis, I will ask your indulgence in the following:

### MALIGNANCY OF ABDOMINAL AREA

Pain in carcinoma of stomach is in reality an early symptom, generally referred to shoulder and back. An old symptom of ulcer of stomach, specially pyloric end, referred to left shoulder more frequent than right or both shoulders. In our limited experience this is true in carcinoma. The pain is usually more severe after intake of food, on account of increase of pressure. Slight relief by vomiting. The pain is rather of a dragging character, rather constant, not at least so intermittent as ulcer. On the other hand, rather referred to as a constant sort of pain. There usually is presented a superficial area of tenderness between the nipple line and center of abdomen with a corresponding area posteriorly between the fifth and twelfth dorsal vertebrae.

This character of pain, associated with age past middle life, dyspepsia, anorexia, nausea, coffee ground vomitus, (in one instance of my own excessive blood in vomitus was confusing), loss of weight, pale leathery color, occasionally a palpable tumor, occasionally enlarged glands in neck and axilla. Absence of free HCl in stomach, low total acidity, with x-ray finding irregularity and filling defect, clinically is suggestive of malignancy.

### GASTRIC CARCINOMA

Is in a greater part based on age, family history, history of stomach over considerable period. Associating this with general weakness, emaciation, continuous pain, especially some hours after eating. The 11 p. m. and 1 a. m. night pain peculiar to cancer of stomach, coffee ground vomit, absence of free HCl and the presence of lactic and fatty acids and x-ray findings. The x-ray will give positive evidence of carcinoma of the stomach. This has been variously placed at 90 to 98 per cent. There is hardly excuse for not using x-ray in gastric cancer.

There is usually the late sign of carcinoma of stomach in way of palpable tumor in the epigastrium, umbilical or hypochondriac region. The mass is usually hard or at least of a firm consistency, sometimes nodular. If epigastric or umbilical tumor is present the mass shows some movement in inspiration. The tumor in umbilical or hypochondriac region frequently disappears, due to peristalsis. The abdominal aorta transmits pulsation widely marked. Tumors at pylorus are most movable. Pain on palpation is common. At times there is visible peristalsis. Small nodules just beneath skin at or near navel area.

## CARCINOMA OF LIVER

There is progressive enlargement. However, in a recent case there was evidently a primary nodular cancer, associated with a more or less degree of cirrhosis. In these cases the liver is not enlarged to any considerable extent. The abdomen is distended in the upper half. The edge of the liver may be palpable on respiration. Usually irregular with large or small nodular findings. Age, beyond forty. May be primary or secondary. Jaundice, ascites, dilated superficial abdominal veins, nodules at navel and along the abdominal white line do occur. Slight temperature. Dyspepsia, anorexia and great loss in weight.

Diagnosis: Age of patient, after 40 years. History of disease in other areas. Characteristic pain, the constant, dull, boring pain, sometimes sharp in the upper right abdomen. The right shoulder pain is frequently present if disease attacks the bile ducts. All pain increases with advancement of disease. Pallor and anemia with red blood cells around 3,000,000 or lower. Loss of weight varying from 40, 60 or 100 pounds. Detection of tumors makes hepatic cancer fairly certain.

Pylorus cancer may be mistaken for hepatic cancer. A point to bear in mind that hepatic cancer is a frequent secondary involvement to pyloric cancer. The pylorus does not present the nodular findings found in hepatic disease; pyloric cancer presents one nodule; this nodule is depressed by deep inspiration, but is not raised by forced expiration. The hepatic sarcoma is more common in young. Pain is less frequent. The yellow, swarthy, anemic color is rather uncommon than common findings as is in carcinoma. The liver surface is not nodular, but a tendency to enlargement and smooth with a general firmness. About 65 to 70 per cent of all cases of carcinoma of the liver have ascites. Usually does not require tapping. Probably due to some disturbance of the portal lymphatics.

## GALL BLADDER

Malignant disease of the gall bladder is almost impossible of diagnosis. The presence of a hard, irregular, nodular tumor in region of gall bladder with loss of weight, associated with pain, should be very suggestive, especially in women. Icterus is not an early or valuable symptom. A tumor usually felt extending diagonally downward and inward in direction of umbilicus. Rather variable in size, rather firm and hard, due to distention of gall bladder or involvement of the surrounding structures. Clinical manifestations are local and general. Location has much to

do in the production of symptoms. Beginning slowly it is usually well developed before discovery.

## CARCINOMA OF SIGMOID OR CECUM

Usually no early symptoms, except in some cases pain, low grumbling character, until obstruction occurs. Age, increasing constipation, specially noted in sigmoid disease. Constant repeated desire to evacuate bowels, tenesmus, passage of blood from rectum, loss in weight; x-ray is a valuable adjunct to diagnosis.

## KIDNEY

Renal carcinoma may be primary or secondary. As a rule late in life. Reported in children. Skin pigmented, abnormal growth of hair on pubis and axillary space, due, no doubt, to influence on the suprarenal body. Renal hemorrhage, if continued and profuse, is diagnostic more than probable of cancer, pain not a constant symptom. Usually most severe during terminal stage. Then found in lumbar region.

In sarcoma, rapidly developing abdominal distention, unilateral in a child, is almost always suggestive of sarcoma of kidney. The smoothness of tumor, limited motion on deep respiration. Anemia, secondary type, is late in sarcoma and early in carcinoma. The size of the tumor in carcinoma is very small when anemia develops. It appears in sarcoma when the tumor has reached rather large proportions.

## CARCINOMA OF PANCREAS

Carcinoma of pancreas rarely, if ever, presents a tumor. The stomach and colon lie in front. There could be little opportunity to demonstrate a tumor of the pancreas in this condition. Occurring late in life, at least past middle life, jaundice, marked and progressive, sometimes nausea and vomiting, emaciation. The symptoms enumerated with the presence of glycosuria would, at least, be suggestive clinically of carcinoma of the pancreas. I call your attention to glycosuria which is a finding of much import and will assist in directing you nearer an almost impossible clinical diagnosis, which at best, is only a suspect.

## CARCINOMATOUS PERITONITIS

Secondary to abdominal malignancy. Masses of growth may be detected. Usually edema develops which renders palpation obscure. There may be a rope like feel across the abdomen, due to rolling of omentum. Adhesions and cystic conditions may give rise to palpable masses. Usually nodules are detected through the abdominal wall.

## CARCINOMA OF MESENTERIC OR RETROPERITONEAL GLANDS

These are usually secondary to an abdominal malignancy. May present a mass in the



middle of the abdomen. So obscure, like most of malignant diseases of the abdomen that clinically a diagnosis at best would be a good guess.

#### INTESTINAL

Malignant disease usually occurring after forty years. In the intestine the disease is much earlier. Maydl reports one-seventh of all cases occur before the thirtieth year. Malignant disease of the intestine is usually primary, unless by extension from adjacent structures. The most frequent location is rectum, sigmoid next, then other portions including cecum and appendix. Relatively rare in small intestine and more frequent in ileum than above. The duodenum, until recent years, was thought to be free from this condition.

#### CARCINOMA OF COLON

Usually occurring at the splenic and sigmoid flexures. Pain in the left hypochondrium. This pain is usually dull and more or less permanent and continues over considerable time. Or sharp, spasmodic pains may be present. The attacks usually follow constipation and relief from the constipation usually reduces the pain. Pain here is attractive as it may be the only early symptom presented. Late in life. Borborygmus, visible peristalsis, presence of tumor, alternating constipation and diarrhea, occult blood in stools.

It matters not the variety of malignancy in the abdomen, the pathologist usually clears that part. The main feature is diagnosis of a cancerous disease and advise your patient accordingly.

#### UTERINE CANCER

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The incidence of uterine cancer ranges through the entire adult life. The average age is somewhere between 45 and 50. Three to seven per cent of cervical cancers occur under the age of thirty. The nullipara shows three to five per cent incidence in the published series. These are important items to remember. Is cancer on the increase? Statistics show conclusively that it has increased in certain races, such as the negro. The prolongation of the average life span has doubtless caused a part of the increase, as cancer is a normal expectancy of the old.

Cancer of the cervical stump may occur after total hysterectomy. It very rarely occurs after a proper repair of the cervical lacerations. Graves reported, in 1927, 4,815 cases of cervical repair including trachelorraphy, amputation and cauterization with only seven cases that later developed cancer.

In these seven cases he felt that cancer was overlooked in three, while in the others the operations were not properly done.

#### HEREDITY

Heredity plays a part in the etiology of cancer, although its exact place of importance has not been determined. Good family histories and autopsy reports will have to be kept through several generations in order to determine the exact part it plays. There seem to be, however, three types of families:

First: Those in which cancer is never seen.

Second: Those with occasional or normal incidence.

Third: Those in whom cancer occurs so frequently that they are known as cancer families.

#### CHRONIC IRRITATION

Inasmuch as all human beings are, or may be, subjected to about the same irritations during life, it does not seem that chronic irritation, by itself, can be given too serious consideration. There must also be some other factor, which we may call "predisposition," present in the individual developing cancer.

Maud Slye has made some very interesting observations of trauma in mice. The mice without hereditary predisposition did not develop cancer after trauma or irritation, while those predisposed did. She carried her observations still farther. She found that there was an hereditary predisposition to cancer of certain organs in mice families. In one mouse family trauma of the breast would produce a malignant tumor of the breast, but it could not be produced in any other portion of the body. In another family she could produce mouth cancer by trauma but nowhere else.

#### INFECTIOUS THEORY

Nuzum's report in 1924, of his work and findings on the infectious nature of cancer, has received very little support.

Ewing, in discussing it at the International Cancer Conference at Lake Mohonk in 1926, stated that "he voiced the sentiment of all cancer students when he said, that it is incompatible with the known facts about cancer. Cancer is not a single disease like tuberculosis. Cancer is a great group of diseases of varied origin and cause."

Blair Bell's theory of cell dedifferentiation is an interesting hypothesis, based on the supposition that the normal cell grows under certain restraints such as:

First: tension of surrounding tissue

Second: nutritional changes

Third: necessity of function

Fourth: purposeful control of the organism.

If these normal restraints are removed or destroyed by injury to the tissue, some of the cells die while others live but do not return to normal or healthy differentiation but become dedifferentiated or cancer cells. He goes on to show that these cells closely resemble those of the syncytium. He thinks that the tendency of the chorionic villi to invade surrounding tissue is checked by some hormone developed by the body because the chorion is a purposeful organ.

#### CLASSIFICATION

Broder's classification of cancer of lip based on the histology is probably the best and simplest. It has been followed by Martzloff, who reported histological and clinical study of 387 cases from John Hopkins Hospital; also by Pomeroy and Strauss, who reported cases studied along the same line.

Cancers studied in this way fall into three histological groups. Martzloff's series showed that there existed a direct relationship between the predominant type of cancer cell present and the malignancy of the tumor.

First: tumors composed principally of spinal cells were the least malignant;

Second: the transitional celled type are more malignant;

Third: and the fat spindle celled type were the most malignant.

The adenocarcinomas fell between the spinal and transitional celled groups in malignancy.

Martzloff's observations warrant the belief that epithelial pearls in the carcinomas are significant only when they occur in the spinal celled group of tumors where they indicate a lessened degree of malignancy. He found that there were carcinomatous extensions from the primary tumors into the broad ligament in the first six months of the symptomatic disease in all groups except the spinal celled type. Less than ten per cent of the patients with broad ligament involvement lived more than one year following operation.

#### TREATMENT

There have been 38 cases of uterine carcinoma treated in the two hospitals during the years 1929 and 1930. Of these 38 cases, 33 were of the cervix; four involving the uterine body, and one involving the left adnexa.

The striking feature about these case reports is that there were almost as many methods of treatment as there were cases. This seems unfortunate, when from the literature of recent years it seems that the

best treatment of cervical carcinoma is pretty well standardized, based on statistical results, as is also cancer of the body of the uterus.

Unfortunately, we have no follow up records of this series except in a few cases so we have nothing to base judgment upon as to whether or not the case was treated by the best method for an end result.

All complete statistical reports are based on a completed five year period.

In his introductory statement to an article by H. S. Crossen in the Southern Medical Journal of April, 1928, "Giving the Uterine Cancer Patient the Best Chance to Survive," he very beautifully sums up the position we all should take in deciding our treatment. Crossen says, "The point at issue is not simply that of securing a good or bad result; of relieving pain or not relieving it. The question is far more serious than that, for it deals directly with the life or death of the patient. Will the patient be alive or dead at the end of a certain period? Will she survive or will she not survive? It is only when we keep this in mind that we realize the full measure of our responsibility. The knowledge and skill of the physician treating the cancer patient is all that stand between the patient and certain death." To quote him further, Crossen says, "Our general plan of treatment of cancer of the cervix uteri is to give a heavy dose of radium, as large as can be given without danger of sloughing into the bladder or rectum, and then follow this at a selected time by deep x-ray therapy of the highly penetrating type. This has been found to be the most effective plan of treatment in nearly all cases in the stage at which the patients come under observation. It stops the bleeding and checks the growth better than any other form of treatment and gives a better chance for permanent cure. It is only occasionally that a case of cancer of the cervix is seen early enough to warrant operative removal. In those exceptional cases in which we feel operation is justifiable, the plan followed is first to give a heavy dose of radium as though we were going to depend on radium for the cure. Then within a short time (a week or ten days) the hysterectomy is carried out, and later this is followed by deep x-ray therapy. This program gives these very early cases the benefit of both operation and radiation."

This is about the routine treatment followed by most physicians having a large uterine cancer experience. In view of Martzloff's studies, showing the early invasions of the perimetrial tissue, it is probably the safest and surest.



## ON CANCER OF THE BREAST

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This report embraces a review of twenty-four cases treated in St. Joseph's Hospital and the Good Samaritan Hospital during the past two years. Four cases can be eliminated, two from each hospital because of an error in diagnosis—the pathological reports did not show malignancy.

This report is necessarily incomplete since there is no attempt at a followup and it is too early to report on "cures."

Primary tumors: i.e., (a) single, limited, freely moveable tumors with no axillary gland involvement,—5 cases; (b) a little more advanced with axillary gland involvement,—6 cases; (c) still more advanced tumors of the breast, adherent to the skin and axillary gland involvement,—5 cases; (d) advanced tumor with fixation to the pectoralis muscle and skin with marked axillary gland involvement,—one case; (e) rigid fixation of tumor to the skin, muscles, and chest wall, "frozen in" and rigid fixation of axillary glands,—2 cases. Recurrent tumors in the scar and in axilla,—one case! distant recurrences—2 cases. The opposite breast was involved in one case. History of injury in 3 cases. Multiple tumors were present in one case.

Radical operation without x-ray,—8 cases; radical operation with x-ray,—9 cases; palliative x-ray,—2 cases; no treatment, one case. Recurrences after radical operation,—one case; recurrences after radical operation and x-ray,—2 cases. Died in hospital after radical operation one year previous to palliative x-ray for pelvic bone metastasis.—one case; died in hospital after palliative x-ray,—one case.

My aim is to present the best known means of diagnosing and treating cancer of the breast and suggest their uniform application in our two hospitals. If these means were applied at the very earliest period the actual cures could be increased very materially.

In the vast majority of cases the patient waits for pain or growth in the tumor before seeking an examination and advice. The public must be taught to seek an examination as soon as a lump is felt in the breast, or a fissure, a keratosis, or a red granular area appears on the nipple. There has been a very noticeable improvement in the diagnostic ability of the medical man when dealing with cancer of the breast during the past thirty years. Bloodgood states that prior to 1900 in Johns Hopkins Clinic more than 50 per cent of the cases were inoperable, while

at the present time it is about 5 per cent. The physicians must learn to recognize the tumors that may become or are cancer. The very early recognition of the precancerous tumors, i. e., before the cells change into cancer, should be our aim. If cancer of the breast can be diagnosed early a cure can be effected. If the diagnosis can be made early before there is axillary gland involvement, you can cure 75 per cent of the cases. With axillary gland involvement the cure is reduced to 10 per cent.

Cancer of the breast usually occurs in women over 35 years of age. I had one case of cancer of the breast in a young woman 19 years old. Mistakes in the clinical diagnosis are most frequently in young subjects. Every tumor in the breast should be considered malignant until it is proven benign.

Examine the patient in the erect posture and again in the recumbent posture, compressing the breast with the palm of the hand and then with the fingers. Always examine both breasts and both axillae.

The presence of a tumor in the breast is usually the first symptom. The tumor, when first noticed, is usually a small induration which gradually enlarges, involving more and more of the breast tissue. In a small percentage the entire breast enlarges and becomes indurated. In the atrophic scirrhus cancer there is a gradual shrinkage of the entire breast. The most common site of the tumor is in the upper and outer quadrant of the breast. In the incipient stage of cancer it is usually a rounded discrete nodule situated in the glandular tissue of the organ and is freely movable with the breast tissue. One of the earliest signs is a shortening of the fibrous trabeculae producing a pitting or retraction of the skin over the site of the tumor, which can be exaggerated by pinching the breast between the fingers and the thumb. If the tumor is malignant there will be an increase in the convexity of the breast. A sulcus or dimpling of the skin over the tumor is particularly noticed when the arm is raised. These symptoms are never associated with a benign tumor unless they have become infected. Pain, fixation to the skin and pectoralis, and ulceration, are all late symptoms. Retraction of the nipple is by no means characteristic of cancer of the breast. Discharge from the nipple occurs in from 3 to 5 per cent of the cases of cancer of the breast. The glands on the posterior wall of the axilla close to the subscapular artery are often the earliest and only ones involved. Enlargement of the axillary lymph nodes often occurs in diseases of the breast other than cancer. Enlargement of the supraclavicular group of lymph nodes occurs late

in the disease, as a rule. The axillary glands should be regarded as potentially malignant in every case of breast cancer.

The concurrence of cancer and benign tumors arising independently in the same breast are not uncommon. Patients may have a cancer in one breast and a benign tumor in the other. An apparently non-malignant breast tumor may become cancer. Cheatele of London has shown that the simple cyst of the breast may become malignant. Do not send patients away with apparently benign breast tumors without advising them to have periodic examinations.

When there is an uncertainty in the diagnosis, make an exploratory operation, remove the tumor and have a frozen section diagnosis; frequently unnecessary mutilating operations will be avoided, and many cases of cancer will be permanently cured.

Preventive measures should be instituted in all abnormal breast conditions. Avoid all forms of chronic irritation. If ulcers, fissures, or granulations of the nipple exist, they should be cleansed and healed. All tumors which may be precancerous should be removed.

Cancer of the breast is one of the most hopeful and curable forms of cancer when diagnosed early, and skillfully treated. The limitations of surgery and irradiation in the advanced stages of the disease are but little understood by the mass of the medical profession and the laity.

A review of the recent literature on the treatment of cancer of the breast shows a great difference of opinions among men of vast experience and world-wide reputation. Many believe that surgery alone gives the best results. Practically half of the operated cases covered in this report had surgical treatment only. The others had radical operation and x-ray combined.

The report of the committee of the American College of Surgeons' on the treatment of cancer of the breast with radium and x-ray, (Greenough, chairman) concludes that prophylactic x-ray did not increase the percentage of cured cases five years after operation and x-ray alone failed to cure any of the cases. X-ray does not add to the life duration in cases of radical operation which failed to cure. There appears to be no material advantage to the patient in the employment of prophylactic x-ray as a supplement to radical operation. X-ray treatment prolongs life in case of recurrences both locally and in the axilla, spine, mediastinum, pleura and lung. Both the low and high voltage apparatus was used in the cases covered by this report. Early favorable cases

without axillary involvement having radical operation and x-ray give 57 per cent of successful results. The more advanced cases with axillary involvement gave only 16 per cent results. No successful results were obtained without operation. Recurrent cases gave only three per cent of satisfactory results at the end of five years.

Harrington<sup>7</sup> gives a review of 2083 cases of breast cancer operated in the Mayo Clinic between 1910 and 1923. Of this number final results were obtainable in 1859. This is a very good statistical study and is not favorable to the use of x-ray. The three and five year successful results were about 5 per cent higher when x-ray was used, but the ten-year results were less with x-ray than without it. His conclusions are like those of Greenough, for the A. C. S., that the radiation does not add to the chances of cure. It must be remembered that most of these cases were operated in the days before modern x-ray technic had been developed.

Wainwright<sup>8</sup> illustrated his paper by large sections of the entire breast showing (1) involvement of pectoral muscles unappreciated clinically, (2) multiple malignant tumors, (3) stasis and dilated ducts leading to carcinoma, (4) spread of carcinoma by connective tissue septa, (5) benign tumors becoming malignant.

Rodman<sup>9</sup> discusses the development of the modern operation for cancer of the breast.

Behrend<sup>1</sup> discusses amputation without removal of muscle. He uses preoperative and postoperative radiation. He says that there is some difference of opinion regarding the value of radiation, but that until the matter is settled, he does not think the full duty to the patient is discharged, unless radiation is given during two years following surgery.

Buchanan<sup>6</sup> shows end results, as showing 34 per cent of patients remaining well more than three years and 29 per cent more than five years. The end results, in this author's opinion, are not materially increased by the x-ray.

Kahn<sup>5</sup>, in a series of 148 cases of carcinoma of the breast with extensive involvement of the glands at the time of operation, found that surgery failed to cure more than ten per cent for five years and that, so far as cure was concerned, the addition of postoperative x-ray irradiation was of no marked benefit. However, it has been possible by x-ray treatment alone or in combination with colloidal lead to relieve pain and produce recalcification in metastatic bone lesions.

Pain is an indication for x-ray treatment whether metastasis can be demonstrated or



not. Deep irradiation is of value chiefly after metastasis has taken place. It is then indicated, first, for the relief of pain, and second, for the prolongation of life. All cases with either single or multiple metastatic bone lesions should be treated by deep irradiation as soon as possible. The arrest of destruction and recalcification may not be demonstrable for periods ranging from several months to a year or two. It is generally advisable to have the patient return at intervals of three months for observation and further treatment.

Bloodgood, in discussing the report, stated that there is no evidence that irradiation has added to the percentage of cures in cancer of the breast, but it is important for the public and the profession to know that irradiation with the x-rays or radium or both is the only treatment that offers any relief when metastasis produces pain and discomfort. In 100 cases of intravenous lead treatment there was no evidence that lead was at all helpful with or without irradiation. In the early stages, surgery offers most.

Portman<sup>3</sup> says the value of radiation as an adjunct to operation for breast cancer is doubted by some surgeons. The fact, however, that there is frequently marked improvement in patients with inoperable cancer when treated by radiation makes it logical to assume that it must be of value in the operable cases also. If radiation can assist in eliminating or deterring the development of tumor cells which will almost certainly be left behind after any operation, then postoperative radiation is logical. The three-year cures by surgery are about 35 per cent. By postoperative radiation and cooperation between surgeon and radiologist, the number of three year survivals will be increased from 35 to 45 per cent. This is gathered from a review of a number of American and European reports.

In a clinical and pathological study of 234 cases from the clinic of the Free Hospital for Women, in Boston, Smith and Bartlett<sup>4</sup> report the cases operated upon, 53 per cent were alive and well at the end of three years, and 36.9 per cent at the end of five years. The results at the end of three and five years were practically the same whether treated by simple amputation or by radical amputation. They hold this to be coincidence and not to be used as an argument in favor of simple amputation.

Microscopic examination can determine the degree of malignancy and indicate the prognosis; in the series surviving the 7 year interval, class 1 showed 83.3 per cent surviving, class 2 showed 28.6 per cent and

class 3 only 8.6 per cent. In classes 2 and 3, the findings of axillary gland metastases will markedly affect the prognosis.

After postoperative x-ray the results were uniformly better both as to gross figures, to type of operation, and to degree of malignancy.

Williams and Curren<sup>5</sup> believe that all operable cases should have radiation before surgery, and postoperative prophylactic radiation. What constitutes an operable case, the surgeon should decide. For inoperable cases, radiation is the only available treatment at present. They use rays from 120 to 200 kilovolts, and cover the chest from the supraclavicular gland area to the free border of ribs anteriorly and posteriorly.

Keyes<sup>6</sup>, during the last five years, has come to regard treatment of primary carcinoma of the breast with radium needles as preferable to operation. In the period from August 1924, to April, 1929, ninety patients were treated with radium. The dosage employed is relatively small (up to 100 mgm.) and the time of exposure is long (seven days or more). The radium is distributed in two main areas: (1) the primary growth, and (2) the lymphatic drainage, including the pectoral area, the axilla, and the infraclavicular, supraclavicular, and intercostal spaces. The needles are inserted through small stab wounds under nitrous-oxide oxygen anesthesia. The effect on the primary growth is usually complete after four months. If the tumor has not entirely disappeared at the end of that time it may be necessary to consider further treatment, operative or radiological. An extensive operation is never required. As a rule no operation is performed. Enlarged lymph glands usually disappear under radium treatment.

In the first fifty of the cases reviewed, histological proof of the nature of the growth was obtained, but in the others no specimen was taken as it has been found that cutting into the tumor sometimes results in the appearance of an implantation growth. Histological evidence of the effect of radium on the tumors has been obtained.

Twenty-three of the ninety patients whose cases are reviewed were treated recently. Of the remaining sixty-seven, forty-one had operable tumors. A good result was obtained in forty-five cases, twelve of which were inoperable. Patients have remained apparently cured up to four and a half years after the treatment.

Lee, Burton J.,<sup>12</sup> who formed our local cancer committee, writes: "The treatment of carcinoma of the breast by irradiation methods, alone or combined with radical surgery,

gives a higher percentage of good five-year results, than when radical surgery alone is employed. Preoperative irradiation aids to the percentage figures of satisfactory five-year results. High-voltage treatment should be employed, permitting an interval of three or four weeks between treatment and operation. Carried out in this way, bleeding at operation is not more active and wound healing is not delayed. Postoperative radiation has increased the length of life after operation and has yielded a higher percentage of satisfactory five-year results than when radical surgery alone was employed. Radium is more effective agent than roentgen rays in dealing with this disease.

The experience of Schoute and Orbaan<sup>13</sup>, based on 106 collected cases in one hospital, in nearly all of which the same surgeon operated in the same way, the diagnosis was controlled by microscope and the roentgen treatment (medium voltage) was always given in the same manner, showed 44.4 per cent alive after five years as against 35.9 per cent following operation only, so they conclude, "We are justified in going on with roentgen treatment after operation for carcinoma. We can go farther and say we should not be justified in stopping."

O'Brien<sup>14</sup> makes a plea for a tumor clinic which will function similarly to our cancer committee, "if we are to get anywhere in this tremendously important question of the treatment of cancer, it is imperative that all hospitals comparable in size to this (Boston City Hospital) should establish a tumor clinic for the diagnosis and therapeutic disposal of its cancer cases. A tumor clinic should function as a diagnostic center, a clearing house, if you will. Its personnel should include one or more members of the medical, surgical, pathological and radiological services. Its members should be young in enthusiasm but old in experience, with a well formulated policy, flexible enough, however, to meet the exigencies of new thought. It will presume an adequate record system and classification based on that of the College of Surgeons, or its equal, as well as a follow-up system for future and maybe invaluable data. Here cases may be graded on purely clinical facts and compared with later pathological grading and surgical findings. Lee has attempted this for cancer of the breast, using age, lactation, rate of growth and extent of disease, to which he has given weight and grading factors to establish a clinical index of malignancy. If this is corroborated and extended to other areas, such an index may well be of inestimable value to the practicing physician who sees these cas-

es early. A tumor clinic, furthermore, will provide facilities for diagnostic roentgen studies and so preclude needless surgery in those patients showing secondary lung, bone or visceral metastases.

When surgery is designated by the tumor clinic group as the particular therapeutic measure to be employed in a case, it should presuppose a common surgical method of attack. One hesitates to talk about standardization in surgery. It smacks too much of commercial efficiency. Yet it is evident that end results can never be compared with anything like definiteness until surgeons adopt a uniform procedure in similar circumstances.

Facilities for a frozen section diagnosis not only should be at the disposal of the operating surgeon but should be used by him. The grading of tissue by the pathologist is essential collaborating. To report that a patient has a carcinoma is woefully incomplete information and no longer acceptable. Knowledge of the radiosensitivity of a tumor will have its influence in both surgical technic and irradiation method."

He has survey 71 cases of breast cancer treated postoperatively in the Boston City Hospital between 1923-24-25, in 50 per cent of which irradiation was not begun until ten months after surgery. "This probably reflects the attitude of the futility of irradiation held by many surgeons, but I am of the opinion it most probably reflects the failure to utilize the facilities of the hospital, due to the anxiety to get patients in and out of bed, so that irradiation is not thought of until secondary carcinoma appears.

Irradiation now has something definite to offer. With the reports at hand on the efficacy of preoperative and postoperative irradiation in breast cancer, there is every reason why it should be resumed. Until our present methods of irradiation have been analyzed in conjunction with a standardized surgical procedure and pathological control, prophylactic irradiation must be considered of the greatest value in the treatment of primary mammary cancer.

Perhaps we may perfect our surgical, pathological and irradiation methods only ultimately to halt because we cannot plumb the depths of a biological process in the terms of physics. But until we have perfected what we can well perfect, we should not accept the nihilism that is about us."

From Forsell's clinic at Stockholm<sup>15</sup> comes the following: "We have been practising the preoperative treatment of operable carcinoma of the breast at Radiumhemmet for the last five years. It is far too early, there-



fore, to pass any decisive judgment on the strength of statistical results, as to the value of this treatment. A preliminary computation of the results—to be published in *Acta Radiologica* in the course of 1929—goes to show, however, that recurrences are obviously less frequent and that they occur later in those cases where preoperative roentgen treatment has been given. In most cases the classic mammary amputation is carried out three or four weeks after conclusion of the treatment. It is very important that the operation should be carried out when the tumor is still under full influence of the irradiation. After the operation postoperative treatment is given, the usual technic being followed."

Pfahler<sup>16</sup>, the dean of radiation therapists in America, in summary of a review of 939 private patients referred for treatment of cancer of the breast says:

"Preoperative treatment and postoperative treatment are advised, because of theoretical, experimental and clinical proof of their value. In the advanced cases of carcinoma with involvement of glands, preoperative and postoperative treatment gave 46 per cent of five-year cures, while 38 per cent of the totally inoperable cases are made operable and in 10 per cent of these, patients were alive after five years.

Postoperative treatment was used in 242 cases (only 25 per cent of 939 cases). Of the patients without involvement of glands 89 per cent, and of those with involvement of glands 47 per cent, were symptom-free after five years. We, therefore, advise postoperative treatment in all cases within two weeks after operation. The statistics recorded in the literature show 20 per cent of five-year cures by operation alone, when glands are involved, and 35 per cent when irradiation is added. Taking the good and bad reports, it is evident that postoperative roentgen treatment gives 75 per cent improvement over surgery alone, and our own records show approximately 100 per cent improvement. Primary operable carcinoma should be treated by irradiation when operation is contraindicated, but in general it would seem that a combination of surgery and irradiation adapted to the individual case may be expected to give the best results."

#### SUGGESTED TREATMENT

The treatment I suggest is as follows:

Primary tumors, (a) both single and multiple, freely moveable growths, with or without axillary gland involvement, radical surgery followed by x-ray.

(b) Single or multiple growths adherent to the skin and, or, to the pectoralis and

with superior axillary gland involvement, x-ray followed in three or four weeks by radical surgery and postoperative x-ray.

(c) Growths that are "frozen in," i. e., rigidly fixed to the adjacent structure with extensive involvement of the axillary and supra-clavicular glands,—radium and x-ray.

Recurrent tumors: (a) growths that are local and freely moveable, preoperative x-ray, radical operation, and postoperative x-ray.

(b) Growths that are fixed, i. e., "frozen in," or ulcerated and axillary and supra-clavicular gland involvement, radium and x-ray.

(c) Distant metastatic involvement, palliative x-ray.

The radical operation for cancer of the breast permits of a number of different incisions; we usually use the one described by the late W. L. Rodman, and is understood to mean the removal in one piece of the following structures: The breast with all of the skin over the breast, the pectoralis major and minor muscles, the glands and gland bearing tissue in the axilla and the deep fascia from the clavicle to the epigastrium and from the sternum to the latissimus dorsi muscle, and the removal of the supra-clavicular glands in case of involvement of this group. No cold knives or scissors should be used for cutting the tissues in the radical operation. Both of our hospitals are equipped with the radio-frequency electric cutting and electric coagulation instrument. The cutting and coagulating currents operate synchronously and without interference so that as the surgeon cuts, the assistant may use the coagulator to dry up the bleeding points not sealed by the cutter. In our last radical breast operation we ligated but six bleeding vessels. The time consumed in the operation is shortened by the use of this instrument and healing is rapid and primary.

When the diagnosis of cancer of the breast is made early and the treatment as suggested is carried out, the percentage of cures in our two hospitals will be as good as is possible to obtain with our present knowledge of the disease.

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## MALIGNANCIES IN ACCESSIBLE LOCATIONS

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The problem of accessible malignancies is somewhat different than the problems presented by malignancies in other localities as taken up by the other members of the committee. The diagnosis is usually easy and simple and it would be rather presumptive for me to take your time in discussing this phase of the subject. We all know, however, that syphilis and lupus must be kept in mind.

The handling of patients with these lesions is many times not so easy, and we see them, sometimes with very extensive lesions, going from one place to another and not consenting to adequate treatment. Some cases and perhaps a large number go to various institutes and have caustic pastes applied, with the result that the malignancy many times is cured but much more normal tissue is destroyed than necessary.

Skin cancer has long been a scourge and curse to the human race in the later years of life, and the adequate treatment should be an obligation of the family physician. It is not always easy for the family physician to handle the patient, however, and he should

not be criticised if his patients do occasionally wander about with inadequate treatment. Theoretically, at least with proper education of the public in these cases, there should be practically no morbidity or sacrifice of organs such as eyes, ears, noses, etc. Most of these lesions on the face come from warts, moles and scaly spots. Also the chronic mechanical irritations must be kept in mind as in the smokers and those who wear glasses. In these cases the infrequency of metastases increases the chances of permanent cure. The basis of all treatment is thorough and complete destruction of the lesion. The methods used are x-ray, radium and electro-coagulation. The cold steel knife is practically never used and the actual cautery is not used as much as formerly.

I thought it might be interesting to present the data we have on these cases that have been treated in the hospitals. These records show the incompleteness of information and the lack of follow up reports. It is the hope of the committee to establish a follow up system for all types of cancer cases, and when that is done their review will be much more interesting and instructive.

### BRIEF REPORT OF CASE HISTORIES

SJ—14445, 9-9-28. Swelling on the forehead where struck with an axe two months ago. X-ray before entrance did not show bone destruction, x-ray treatment was given. At operation the tumor was found to involve the bone extending into frontal sinus. He was discharged in four days. At the second admission about one month later (10-2-28) the tumor had extended through the bone with pulsating brain tissue showing. He had no further treatment and died about one month later. (11-1-28). Pathological diagnosis; Endothelioma.

SJ—13986. Sarcomatosis (?), 4-27-28. Marked induration of the skin of the lower extremities. The record was not very complete in this case and there was no positive diagnosis established.

SJ—14244. Carcinoma of the Glans Penis. Amputation was done (8-3-29) and the pathological diagnosis was squamous cell carcinoma; there was post-operative x-ray. It would be interesting to know what happened to the patient and how long it took to happen. However, he is probably well and happy.

GS—6607. Sarcoma of Left Axilla Involving Ribs, 9-12-29. Nodes under the skin of the left arm from shoulder to neck and also in the left axilla. There was operative removal of the axillary glands on the day of admission to the hospital. Pathological report, round cell sarcoma. The patient died about one month later (10-15-29); the postmortem showed ribs involved. The record does not show much investigation.

GS—6882, 10-9-29. Tumor Under the Left Ear. Clinical diagnosis was carcinoma, the tumor was removed and the pathological report was inflammatory.

GS—42-5-29. Cancer of the lip from smoking and cancer of the stomach. The patient died in coma and there was no further investigation. There was no record evidence to substantiate either a diagnosis of stomach or lip cancer. From the brief his-



tory we take it that he was a smoker. He might have died from this.

GS—6756, 8- -29. Carcinoma about the orbit. This patient was referred from New Mexico for treatment of an extensive carcinoma involving the entire circumference of the right orbit which dated back about 20 years. The tumor growth almost disappeared after one treatment by x-ray, but in September of the same year about one month later the eye was exposed and the patient went to the hospital for enucleation. Two more x-ray treatments were given. Report from the case in January, 1930, about five months later, physician reports that the lesion seems to be well.

GS—4015, 11-?-29. Old epithelioma under the eye. This patient has been under observation and treatment since March, 1928. She was originally referred by a dermatologist for fungating epithelioma under the right eye, arising on the base of an old syphilitic lesion. From March to August several x-ray treatments were given but the lesion did not heal. Electrocoagulation was then done followed by heavy doses of radium applied at a distance. In November, 1929, more than a year later, she was taken back to the hospital for further radium treatment. The lesion is not described at this time. The patient was then lost track of and has not been seen nor heard of since.

GJ—2575, 3- -28. Epithelioma of the Left Ear. This case was treated by x-ray prior and during February, 1927. The lesion never entirely healed. March 1928, over a year later, the pinna was excised with the cautery knife. Post operative x-ray was also given. The patient was reported as having no recurrence in Dec. 1928, nine months later.

GS—9- -27. Tumor in the right side of neck. The patient was given preoperative x-ray and the tumor was excised and a diagnosis of adenocarcinoma made. Post operative x-ray was also given. There was a recurrence and in Dec., 1927, preoperative x-ray was then given again in January, 1928, and the tumor again excised, radium being placed in the wound. Postoperative x-ray was also given. The patient died late in 1929.

SJ—18153, 11-26-29. This case came into the hospital with a provisional diagnosis of malignancy of the internal organs from a degenerated mole on the back. This was apparently an epithelioma of the scapular region and was apparently successfully removed with x-ray in 1928. At the time of admission to the hospital he had swollen forearms, with blister formation. One doctor said lungs, liver, muscles and abdominal organs were all involved. Another doctor's examination reported no tumors, tenderness or rigidity or the abdomen and lungs normal. The patient died in the hospital and no autopsy done. Therefore, there is some doubt about the diagnosis of metastatic malignancy.

SJ—16694. Carcinoma of the lower lip. In this case there was excision of the lip lesion and block dissection of the glands of the neck. There was subsequent x-ray treatment. What has become of patient and his cancer we are unable to say, some of it at least is doing him no harm.

SJ—15675, 5-12-29. Carcinoma of the lower lip. In this case there was a growth in the middle third of the lower lip infiltrating toward the chin. There was a v-shaped excision of the lip lesion with the electrotome and a block dissection of the cervical glands of the neck. There was postoperative x-ray given. That has been a year ago and it would be interesting to know the condition of the patient at this time.

SJ—17215, 7-25-29 and 12-12-29. Carcinoma of the lip, on lupus basis after injury. The lesion was removed by electrotome knife and electrocoagulation, the pathological diagnosis was squamous cell carcinoma. This treatment was followed by x-ray but there was recurrence.

Note:—12-12-29. Caustic destruction in California has been used; edges were freshened and brought together. The patient is going back for other treatments with chemical caustics.

SJ—15060—12-8-28. Carcinoma of the foreskin. Excision of the foreskin with electrotome. Path. diagnosis equamous cell carcinoma.

SJ—17235, 7-8-29. Advanced Carcinoma of the hand. Amputation was done at the middle third of forearm. Pathological diagnosis was sq. cell carcinoma.

SJ—14571, 10-1-28. "Growth size of an egg." This growth was removed. We presume that it was removed from some part of the patient's anatomy, but the record is silent on this point. Pathological diagnosis, basal cell carcinoma.

SJ—14472, 9-18-28. Carcinoma of the labia. This patient gives a history of old infection of Bartholin's gland and vagina. The labia was thickened and there was much granulation tissue which was removed. Pathological diagnosis was squamous cell carcinoma. The subsequent history is not given.

SJ—3-30-29. Carcinoma of the tongue. In this case there was ligation of the external carotid and left lingual arteries. Radium was then placed around the lesion. At the second operation one-half of the tongue was amputated with the cautery. Patient went out and about, one month later (4-4-29) came back on account of pain. About one month (5-18-29) later excision of recurrence was done and the wound was opened for x-ray therapy. The patient died in the summer.

GS—7234. Carcinoma of undescended Testicles. In Dec., 1924, an undescended testicle was removed at St. Joseph's hospital which was carcinomatous. It recurred in the groin in June, 1925, and was again removed and radium was applied in the wound, this was followed by x-ray. This healed and stayed healed until April, 1929, when the tumor again appeared in the groin. There was preoperative x-ray treatment and the patient was reported satisfactory in Aug., 1929. In Dec., 1929, the swelling again appeared and the lymph glands and scar tissue was removed. The pathological report did not show carcinomatous change. In May, 1929, a tumor was again removed and this time the pathological report showed alveolar carcinoma. In March, 1930, the patient went to consult Dr. Coffey. At that time there was much swelling in the leg and groin.

GS—6998. Carcinoma of the rectum. This cancer of the rectum was removed in June, 1927, by Dr. Murietta in Los Angeles with the Percy cautery. The case was referred in Oct., 1929, for radiation treatment for recurrence. She was referred to a surgeon for advice and recommendation. At operation only colostomy seemed possible. This was done and the patient referred again for radium and x-ray. Regular 20 mg. hrs. of x-ray at 190 kv. and 975 mg. hrs. of radium inside sinus connecting with the newgrowth in Nov., 1929. Feb., 1930, patient reports that she is feeling well, gaining strength slowly, she has no special discomfort. The colostomy opening is functioning very satisfactorily.

## PAGET'S DISEASE OF THE NIPPLE

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Carcinoma of the breast is one of the commonest forms of cancer. The number of types is large and most of them are extremely malignant. So much has already been written on the subject that there does not seem room for more. However, there is a rare form which has not been very well studied and on which the text books contain very little. Besides, what little information there is available is not very exact, so perhaps it will not be an unpardonable sin to discuss this type of tumor for a few moments. I refer to Paget's disease of the nipple. This was first described by Paget in 1874. How many cases he saw is not mentioned. It seems to be uncommon but perhaps there are many unrecognized cases. We recently have had one case and I can call to mind one other case, with tissue sent in for diagnosis. There was, more recently, two cases which were doubtful. We saw only the slides, which were poorly stained, so it was impossible to make a diagnosis. So far as I recall, all these cases but one were from Arizona.

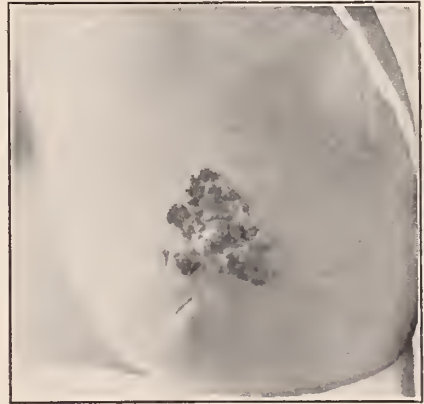
Paget's disease usually attacks the nipple or adjacent regions but the same condition may occur on the skin of any portion of the body. Next to the nipple, the penis has been the region most frequently involved. The primary lesion is usually a sort of itching, eczematous condition which spreads very slowly and may be years before it gets large enough to be noticeable. There is usually some induration of the skin in the affected area and a definite tumor may develop. The location of this tumor is the most important condition in regard to the disease. It may be connected with the primary growth, in the breast beneath, in the axillary glands or in some remote part of the body in no way related to the primary growth. In this way it behaves like a sarcoma. The cause of the condition has never been determined and all authors are not agreed that the primary trouble is a new growth. Some have inclined towards infection. It usually appears between the ages of 40 and 60 and may be present ten years or more before serious trouble develops. There may be several types of cases as the conditions, described by different authors, do not all appear exactly alike. It is pretty well agreed that the characteristic cell is a large, rather pale staining cell with large vesiculated nucleus. Some authors state that it originates from the ducts of the gland wall within the nipple. Others consider it as originating in the skin cells

and it is analagous to basal cell tumors in other places. Some authors mention the fact that there are a large number of plasma cells present. Other authors claim that the Paget cells originate in the prickle cell layer of the skin. One reason for all of this mixup is that no case has probably been studied early and changes have been going on for years before the case was seen. Until one has a chance to study some early cases, the true nature of the condition will probably never be unraveled.

There is not much to be found as to the course of the disease. If the condition is removed while it is still local, the chances for complete recovery ought to be good. After a definite cancer has developed, the condition is much more serious and, according to some authors, it is as hard to cure as any cancer.

Our first typical case was seen several years ago, and all we had was the specimen sent in for diagnosis. We never had any history of the case and never heard whether there were any recurrences or not. It was a typical case, simply involving the nipple.

We had a second case in which there was apparently some trouble with the nipple and the woman was sent to us for an examination. This showed nothing specially characteristic and the breast was removed and sent to us. It contained a very small area of cancer but not of the Paget disease type.



Our last case was seen recently in a very robust and healthy woman of about 70 years of age. She had an eczematous, warty condition above the nipple which had existed for some ten years (Fig. 1). This area was about thirty millimeters in its greatest diameter, brownish colored, distinctly raised from the rest of the skin, thickened and nodular, like an old keratosis. The skin beneath was somewhat indurated. There were no masses in the breast that could be felt. The axilla contained several enlarged glands of various sizes which were quite firm. A short time



ago one of these glands had been removed and sent to a tissue diagnostician for examination. He reported a rapidly growing, malignant tumor, the character of which was difficult to determine but was inclined to think it was a sarcoma. This case was operated on by Dr. W. L. Brown and the specimen was sent to the laboratory. The eczematous, nodular surface of the breast, near the nipple, was found as previously described. The breast was sectioned and no areas of suspected malignancy were found. The glands in the axilla were grossly malignant, being quite firm, greyish in color and rather friable. Microscopic examination of the areas in the skin show a variety of conditions. In one place, where there is not much thickening of the skin, we have an overgrowth of epithelium with finger-like processes projecting into the subcutaneous tissue and a good deal of keratinous deposit on the surface. In two places they are enclosed and form epithelioid pearls. In other places where the growth is thicker, these cells are invading the subcutaneous tissue. There is considerable reaction around them. In places, right in the skin, the cells take on the appearance of small round cells with relatively large, deep staining nuclei and have but little suggestion as being true epithelial cells. A section from the gland shows bands of fibrous stroma of varying density and scattered through this are dense masses of cells quite small, round or oval in shape, with the entire cell being made up of nucleus, which is dark staining. In other places, there are quite a number of large, pale cells with large vesiculated nuclei. In some places these are quite abundant and occasionally one has more than one nucleus. Mitotic figures are also present. In other places these cells are very scarce and can be seen scattered amongst the small round cells. The small round cells have no arrangement suggestive of lymphoid tissue though they may represent a violent reaction on the part of the body against the invasion of the new growth. However, if one did not know the history of the case, and saw the section by itself, he would be very much inclined to classify the condition as a lymphosarcoma and, as one studies the cells in the skin, he is not sure whether it originated there or whether they are a local product. A few eosinophiles are scattered throughout the section. Diagnosis is Paget's disease with metastases.

#### DISCUSSION

In studying the primary growth, one feels quite certain he has a typical epithelioma of the prickle cell type, but in the metastases there are no epithelioid pearls and no areas

that even look like typical squamous cells. It will be noted that there were no tumors in the breast itself, but definite metastases in the axilla. I believe the condition to be a very slowly developing skin cancer and that the proper treatment for these cases is early excision with a wide margin of healthy skin. Physicians ought to be on watch for this condition for there are probably many cases that never develop cancer but if all of these eczematous conditions were treated early, the possibility of cancer developing later would be eliminated.

#### NON-TROPICAL SPRUE

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and

M. P. BEAM, M. D.

ALBUQUERQUE, N. M.

So called non-tropical sprue is being more and more frequently reported in American medical journals. In the past this disease has been considered as essentially a tropical malady, patients usually giving a history of having at one time or another lived in the tropics or sub-tropics. As a matter of fact residence in such a climate was considered a necessary etiological factor in arriving at a correct diagnosis. This would now seem not to be essential, as quite a number of cases have been reported in which the patient has never been outside of the United States, many of them not even having visited our southern states.

The cause of sprue has not been definitely established. A number of theories have been advanced, briefly they are as follows:

- The mycotic theory
- The food deficiency theory
- The helminthic theory
- The bacterial theory
- The climatic theory
- The syndrome theory

The food theory as differentiated from the deficiency theory.

Perhaps the two most widely considered are the deficiency and the mycotic theories. Both have considerable merit, yet neither is puncture proof. Personally, we incline to the deficiency theory until further research proves it wrong. One of us having worked in the tropics for a period of ten years, has been greatly impressed with the results obtained in sprue cases following treatment with a balanced diet. The finding of fungi in the stools of patients suffering from sprue is supposedly characteristic, but also these same fungi are not infrequently observed in perfectly normal individuals. Castellani has observed the following fungi in cases of sprue:

*Monilia albicans* Robin

*Monilia decolorans* Castellani & Low

*Monilia intestinalis* Castellani

*Monilia faecalis* Castellani

*Monilia insolita* Castellani

*Monilia tropicalis* Castellani

*Monilia enterica* Castellani, probably synonymous, according to Castellani, with *Monilia psilosis*

*Ashfordi* and *parasaccharomyces ashfordi* Anderson.

*Oidium rotundatum* Castellani

*Oidium asteroides* Castellani

In Siam one of us cultivated the stools of a large series of patients from the out-patient department of the Central Hospital in Bangkok and had no difficulty in recovering many of the above listed monilias. *Monilia psilosis* was found to be a not uncommon inhabitant in patients quite free from sprue. We have been unable to produce sprue-like symptoms in monkeys fed on cultures of *monilia psilosis*. On the other hand McCarri-son has reported lesions, comparable to the pathological findings in sprue, in monkeys fed on a vitamin free diet.

#### PATHOLOGY

The principal pathological finding in cases of long standing is a marked thinning of the intestinal walls. The liver and spleen are reduced in size and the tissues in general will be found to be dehydrated. Although bile is secreted it is reduced in the intestine to a colorless substance, leucobilin. An excess of fat in the stools would indicate either a pancreatic lesion or an inability on the part of the intestines to absorb the same as a result of the destruction of the lacteal capillaries. Microscopically we find a destruction of the intestinal villi of the ileum from superficial ulceration. This is probably the end result of a primary congestion of the submucosa interfering with the blood supply. The drawing (Fig. 1) illustrates the principal pathological finding.



Fig. 1.

#### CASE HISTORY

Miss L., born in Frankfurt, Germany, in 1880 and came to the United States in 1891, has lived in New

York City for 31 years. Childhood diseases include rickets, mumps, scarlet fever and whooping cough. In 1902 had appendix removed and was also diagnosed as having "ulcers of the stomach." In late 1902 was again operated upon for "stomach adhesions." Has had influenza several times since then, also tonsillitis. Otherwise well; average weight in past 20 years, 114 pounds.

From December, 1927, to March, 1928, suffered from a severe bronchitis. Tonsils were removed and was otherwise treated with autogenous vaccines, steam inhalations, colonic irrigations and bed rest for 12 weeks. Patient states she had recovered after two months. The following September she suffered an attack of influenza, cough, expectoration, chills and fever almost every other day. Temperature varied between 101 and 103. Treatment consisted of rest in bed, inhalations, autogenous vaccines and one transfusion. At this time first suffered from intestinal upset, stools loose, light in color, much flatus. Had lost in weight to 94 pounds. After three months allowed out of bed and sent to Albuquerque, New Mexico.

General condition upon arrival in Albuquerque fair. Appetite poor, cough continuous with moderate expectoration. Temperature varied between 100 and 103. Treatment consisted of rest in bed, vaccines, cod liver oil. Stereo of chest at this time revealed the following:

There was an obliteration of the right costo-phrenic angle. The lymphatics were thickened over the entire pulmonary area. There were several pea-sized areas surrounding the right hilum that suggested slight parenchymal thickening. There was also some slight parenchymal thickening of the extreme left base.

At this time the patient was referred to us by her physician as he did not think she was suffering from tuberculosis. The sputum examinations had been negative on several tests. Her weight at this time was 97 pounds and she was suffering from nausea and some vomiting. Stools loose, foamy, characteristically sprue-like. Gastro-intestinal x-ray examination was essentially negative. Blood count gave red cells 5,280,000, hemoglobin 83, white cells 11,600, differential, polys 65, small lymphocytes 29 and large lymphocytes. A test meal at this time, after one hour, gave a total acidity of 4 and no free hydrochloric acid. The urine examination revealed a trace of albumen and many pus cells, otherwise negative. A blood calcium could not be done.

An interesting complication developed at this time in the form of a severe mycotic pruritus vulvae.

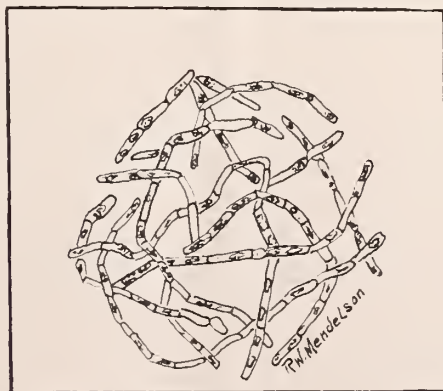


Fig. 2.

The illustration (Fig. 2) shows the fungus recovered from the lesions. This condition responded to



treatment. We rather feel that the infection may have been contracted from the stools. Unfortunately we did not have the necessary sugar media to identify the fungus recovered.

Our diagnosis at this time was putrid bronchitis and non-tropical sprue.

Treatment instituted for the bronchitis was purely symptomatic. We felt that if we could control the intestinal difficulty we could build up the patient's resistance and thus indirectly effect a cure of the bronchitis.

The patient's weight had gone down to 93½ pounds. There was some swelling of the lower extremities and also some fluid in the abdomen. The cough was severe, the sputum considerable, but entirely negative for *B. tuberculosis*. The patient suffered from intestinal distention. The urine examination at this time was essentially normal.

An anti-sprue treatment was instituted. It consisted of a balanced diet, complete rest in bed, plenty of fluids and the following powder four times a day: Calcium lactate, gr. xv, with parathyroid gr. 1/10. Improvement began shortly after this line of treatment was instituted. The bowel movements decreased in frequency, the color gradually returned, the nausea disappeared, the appetite increased and the edema gradually lessened. The above treatment was instituted in the early part of July, 1929. By the first of September the weight had increased to 110 pounds, the cough had disappeared, the appetite was good and the stools were practically normal. At the present time, June 23, 1930, the patient weighs 116 pounds. She looks perfectly well and she states that she feels quite normal. There is no intestinal trouble and no sign of any bronchitis. The gastric analysis, just completed, reveals a total acidity of 30 and a free hydrochloric acid of 20.

#### COMMENT

A case is presented symptomatically suggesting so-called non-tropical sprue. Therapeutically, it responds to the recognized treatment of such a disease. Although the patient did not suffer from the classical sore mouth and the blood picture was normal, we may diagnose the condition from the other symptoms, plus the characteristic gastric analysis and therapeutic results obtained. The blood picture may be accounted for by a change in residence on the part of the patient from sea level to an altitude of 5000 feet, the early treatment of the condition and a concentration of the blood as a result of the edema. Incidentally the patient stated that in September of 1928, when she first suffered from intestinal distress, she was given a blood transfusion on account of being anemic.

We feel that sprue is a deficiency disease possibly depending upon a parathyroid dysfunction. The intestinal flora in sprue we consider of secondary importance.

## THE NEW MEXICO MEDICAL SOCIETY FORTY-EIGHTH ANNUAL MEETING, AT RATON, NEW MEXICO, JUNE 4-6, 1930 June 4, 1930

The Forty-eighth Annual Session of the New Mexico Medical Society convened at Raton, N. M., June 4, 1930, this being the second meeting to be held in the northern section of the state.

Registration headquarters were established in the Hotel Swastika, where the business and scientific sessions were held on Wednesday, the opening day.

#### Meeting of the Council

Called to order by President-elect Dr. R. O. Brown (Santa Fe) at 9:30 a. m. There were present: Ex-officio members, Dr. R. O. Brown and Dr. L. B. Cohenour; Members, Dr. C. B. Elliott (Raton), Dr. W. T. Joyner, (Roswell), Dr. F. D. Vickers, (Deming), and Dr. M. K. Wylder, (Albuquerque).

Motion was made by Dr. Joyner that Drs. F. D. Vickers and M. K. Wylder be appointed to act as members of the Council at this session in place of Dr. Carl Mulky (Albuquerque) and Dr. Dwight Allison (Las Cruces), absentees; seconded by Dr. C. B. Elliott and carried.

Financial report of the Treasurer was read by Dr. Cohenour, as follows:

Gentlemen: I hereby submit a report of the financial affairs of the New Mexico State Medical Society ending this date:

Balance on hand June 12, 1929.....	\$1,080.00
Delinquent dues collected and dues collected for new members for 1929 (11 members) .....	55.00
Annual dues collected for 1930 from 214 members .....	1,070.00
Total cash on hand June 4, 1930 .....	1,551.57

#### Disbursements:

Reporter for 1929 meeting (Balance half fee) .....	100.00
Secretary's salary for 1929 .....	300.00
Southwestern Medicine for 218 members.....	436.00
10 members for 1929 .....	20.00
Reporter for 1930 meeting (advance half fee) .....	100.00
Medical Directory for 1929 .....	15.00
Treasurer's bond for 1929-1930 .....	5.00
Dr. T. P. Martin (costs for medical meeting for 1929) .....	80.35
Lewis Printing Co., 350 programs for 1929 meeting at Taos, N. M. ....	28.00
Commercial Service Co.—repair typewriter .....	13.25
O. A. Matson Book Store (half pint glue) .....	.50
Southwestern Printing Co. (150 letterheads) .....	3.00
Southwestern Printing Co. (100 2c stamped envelopes) .....	4.50
Southwestern Printing Co. (300 2c stamped envelopes) .....	10.00
Total expenditures for 1929-1930 .....	\$1,215.60

#### Outstanding Indebtedness:

Southwestern Medicine dues for 214 members for 1930 .....	428.00
Secretary's salary for 1929-1930 .....	300.00
Reporter for 1930 meeting (balance of half fee) .....	100.00
Medical Directory for 1930 .....	15.00
Treasurer's bond for 1930-1931 .....	5.00
Approximate total .....	\$ 848.00
Expected balance after all bills are paid.....	\$ 703.57

Respectfully submitted,

(Signed) L. B. Cohenour,  
Secretary and Treasurer.

Motion was made by Dr. Wylder that the Treasurer's report be accepted as read; seconded by Dr. Joyner and carried.

Dr. L. B. Cohenour, secretary-treasurer, spoke of

the need for a new typewriting machine and requested authority to purchase same, exchange allowance to be obtained for the old machine traded in.

Dr. Joyner made motion that the secretary-treasurer be authorized to purchase such typewriting machine, after securing as large an exchange allowance for the old machine, as possible; seconded by Dr. Wylder and carried.

The secretary presented application of Dr. M. H. Thompson, Logan, N. M., for membership in the society.

Dr. Elliott made motion that Dr. Thompson be elected to membership after satisfactory approval by his reference, Dr. Dougherty; seconded by Dr. Wylder and carried.

Dr. Joyner stated that he believed steps should be taken to increase membership in the society, by securing as members-at-large those doctors who live and practice in sections where there is no component county society, and thought the secretary should have some forms of invitation printed, obtain a list of such men and send them invitations urging affiliation with the society, suggesting that such names might be secured by checking the membership list with names given in the Medical Directory.

The secretary presented a letter from the American Medical Association in regard to membership of Dr. Walter G. Hope, a former active member of the society. He stated that Dr. Hope was no longer able to practice on account of disability, that he had been elected an honorary member of the Bernalillo County Medical Society at Albuquerque, and desired to retain his membership with the American Medical Association, but before this could be done, it would be necessary for him to be elected an honorary member of the New Mexico Medical Society.

Motion was made by Dr. Wylder that Dr. Walter G. Hope be elected an honorary member of the New Mexico Medical Society; seconded by Dr. Joyner and carried.

Dr. Elliott spoke in regard to the registration assessment levied by the Colfax County Society at this meeting in order to help defray expenses of same.

Dr. Vickers made motion that the state society assume the costs of printing programs for the 1930 annual meeting; seconded by Dr. Wylder and carried.

Adjournment 10 a. m.

#### General Session

The meeting was formally opened at 10 a. m., the call to order being made by Dr. L. B. Cohenour (Albuquerque), secretary-treasurer, acting temporary chairman in the absence of the president, Dr. F. Crail (Las Vegas).

Invocation was delivered by Rev. Homer F. Cooke, pastor of the Christian Church, Raton:

"Oh Lord of Hosts and Thou who didst long ago stoop to touch Thine own finger to the pain wracked bodies of mankind, we know Thou art concerned in the affairs of this assemblage today. We thank Thee, Oh Lord our Father, for the advance human mind has made under Thy appurtenances. We thank Thee for the unconquerable advance of the medical profession. We thank Thee for these men and for the vast company of men of whom these are a few who consecrate their lives without stint or limit for the alleviation of human suffering. We thank Thee for their ideals, and now beseech Thee that they shall be guided by Thee during the sessions of this convention and that the pleasure and profit derived therefrom shall send them back to their homes with renewed vigor and greater inspiration for the tasks ahead of them. We ask it for Christ's sake, Amen."

Address of welcome, by Dr. A. R. Streicher, Mayor of Raton:

"Mr. President, Members of the New Mexico Medical Society and Visiting Physicians:

"In reviewing this little booklet which gives the program, I notice you are to have quite a number of papers to be read and discussed at this convention and presume there will be many references made to Exhibits A and B, or Specimens A and B. Behold here, Exhibit A, one who was actually cured and relieved of hay fever and asthma in this wonderful climate of Raton and vicinity. Graduating in Kansas City, we located in the Missouri Valley, 35 miles from Omaha. We found it low in altitude, but high in humidity, and thick with rag weeds, corn tassels and many other things. We found we only have two hands and with only two hands that is not enough for a dentist with asthma and hay fever to take care of his nose and look into the mouths of other people, so it seemed necessary to look around for another location. After much prospecting, we finally found the City of Raton, with its rarified air and lack of humidity, so we located here and never from that time have we been disappointed in this location where we were immediately relieved of asthma and gradually found relief from hay fever. When I say we were relieved of asthma immediately, I mean that in the six weeks before leaving the low altitude we had suffered for three or four weeks with intense spasms every night. The first night here the spasms ceased and the second night we lay down and slept the sleep of peace, and gentlemen, I want to say that was sure a grand and glorious feeling the next morning.

"Now for Exhibit B. My attention was called to the weather this morning when we assembled for the meeting of this convention, in comparison with that we had during the bankers' convention held here several weeks ago. My attention was called to the fact that as soon as the delegates to the bankers' convention began to arrive, it commenced to rain, became cold and the weather was disagreeable as long as the session lasted, the inference being that the condition was brought with them and is the same met with when you go to a bank to borrow money. Yesterday, as soon as the big, warm-hearted congenial physicians commenced to arrive, climatic conditions changed to the bright warm sunshine we have this morning and our weather is restored to its normal condition again.

"On behalf of the Colfax County Medical Society, and the citizens of Raton, I wish to extend a hearty welcome to you all. May your visit be a pleasant one, and your work most profitable, and may you enjoy yourselves thoroughly while here."

In the absence of Dr. F. F. Doepp, Carlsbad, Dr. F. D. Vickers (Deming) responded on behalf of the Society:

"I am sure that we fellows gathered here from all over the state are very glad to have such a perfectly delightful and charming place to which to come, where we can be cared for so pleasantly in your fine hotels. We are certainly very glad to be here, are greatly impressed with the beauty of your city and highly appreciate the hearty reception which has been accorded us. The mayor's reference in his address to the bankers' convention reminds me of a little story, the experience of a doctor friend of mine. Being in need of a loan, he consulted the president of a bank in his town, only to be refused, though his credentials were of the best. 'Could not think of it,' the banker said. At that the doctor changed the subject and asked 'Why, Mr. Banker! where did you get your glass eye?' It happened that the banker was very sensitive in regard to his eye condition. He had spent much time, energy and money to secure what he thought was an exact reproduction of the other eye and had



kept the matter an absolute secret, and consequently was much chagrined that the defect had been detected. 'How did you know,' he asked, 'Tell me and you will get the money.' To which the doctor replied, 'Well! I thought you looked a wee bit more sympathetic in that eye than in the other one.'

Dr. Robert O. Brown (Santa Fe), the incoming president, was then introduced by Dr. Cohenour and delivered his presidential address. (See July issue).

Complimenting the doctors of New Mexico as a group of men meriting and receiving great respect as individuals in human society, and as a group among the larger group of physicians and surgeons of the United States for their professional ability, Dr. Brown pledged his sincere efforts to be of service to the society. He stated that only by a coherent and cohesive state society could the profession secure for themselves, the profession and for society at large in New Mexico, the things which were desired, such desires falling naturally in certain divisions: the physician's own legitimate economic desires; the desire to improve professionally, and the desire to render the greatest service possible to that society of which we are members. Ways listed in which the medical profession as a group can render service to the community besides the daily practice of their profession, included encouragement of the work of the Bureau of Public Health; aid and encouragement of the work of the State Bureau of Child Welfare and of the various local units of welfare work; education of legislators to the needs of these Bureaus, financial and legislative, and education of legislators to the need for adequate protection for the layman citizens of the state from the practitioners of the healing arts known not to be adequately educated in those arts.

Adjournment until 2 p. m., followed Dr. Brown's address.

#### House of Delegates

Meeting called to order at 1:30 p. m. by the president, Dr. R. O. Brown (Santa Fe). Present: Dr. L. B. Cohenour (Albuquerque), Dr. M. K. Wylder (Albuquerque), Dr. F. D. Vickers (Deming), Dr. R. J. Groom (Santa Rita), and Dr. C. F. Milligan (Clayton).

The secretary, Dr. L. B. Cohenour, presented and read his report, as follows:

Gentlemen: I hereby render a report of the affairs of the office of secretary-treasurer for the term ending with this session.

At the meeting held in Tucson, N. M., June 12, 1929, there were several members suspended for non-payment of dues and immediately following were reinstated.

Members in the society at this time are as follows:

	1929	1930
Bernalillo County .....	42	45
Chaves County .....	19	19
Colfax County .....	17	15
Curry County .....	10	12
Dona Ana County .....	12	11
Eddy County .....	7	9
Grant County .....	12	16
San Miguel County .....	6	6
Luna County .....	7	6
McKinley County .....	13	11
Santa Fe County .....	21	17
Union County .....	11	9
Members at large .....	39	37

Total in good standing this date.....214

One application for membership was received to be presented at this meeting. Since the 1929 meeting, a few members have left the state and a few are delinquent.

Two deaths of members of this society occurred

this past year—that of Dr. F. E. Bird, Albuquerque, N. M., July 8, 1929, from apoplexy, and Dr. Miguel F. Des Marais, Las Vegas, N. M., July 19, 1929, from malignancy.

Respectfully submitted,

(Signed) L. B. Cohenour.

Dr. Groom made motion that the secretary's report be accepted as read, seconded by Dr. Wylder and carried.

The chair suggested that efforts be made to induce Drs. Vickers and Wylder, with instructions to report at the last meeting of the House of Delegates.

The minutes of the Council meeting held on the morning of June 4, 1930, were read and approved.

The chair suggested that efforts be made to increase the membership of the society by checking up the list of members with names appearing in the last Medical Directory and urging those doctors whose names appeared therein and who are not now members of the Society, to join either a component county society, if near one, or become a member at large.

#### Scientific Session

The afternoon session was opened with a paper by Dr. M. K. Wylder (Albuquerque) entitled "Preventive Medicine as Applied to Pediatrics." Dr. Wylder declared that prevention of disease and suffering is the primary function of our Health Departments, which could not exist were prevention taken out of their work; that pediatricians do and always have been taking the lead in preventive medicine. The principal diseases mentioned as being preventable were:

Rickets,—proper supervision of the mother's diet.  
Cretinism, myxedema and muscular dystrophies,—by giving iodine to expectant mothers;

Syphilis in infants,—by early and vigorous antiluetic treatment in known cases of syphilitic parents;

Smallpox,—by vaccination;

Diphtheria,—by use of T. A. T. or Toxoid.

Dr. Wylder spoke of the value of convalescent serums in connection with poliomyelitis, if given intraspinally; in measles when injected into the gluteal muscles; also in mumps, chickenpox and encephalitis lethargica. He stressed also the value of iodine in the prevention of goiter, the efficiency of typhoid vaccine and tetanus antitoxin.

Discussion was opened by Dr. F. M. Heller, Pueblo, Colo., who stated that our advance in longevity has come much through the efforts of the obstetrician because of prenatal care in saving the child; as to the problem of chorea and rheumatism in the child, much remains to be done if we expect a reduction of the mortality rate from heart disease, which is largely initiated in childhood.

Dr. F. D. Vickers (Deming) asked Dr. Wylder to mention in his closing of the discussion the kind of tonsils that should be removed, if the stubs should be removed also, and if by so doing, would rheumatic fever be prevented?

Dr. J. M. Britton (El Paso, Texas) told of a case of chorea under his care in a child nine years old, with very large, hypertrophied tonsils, which the parents hesitated to have removed. They finally consented to a tonsillectomy, however, and the child was relieved immediately following same, with no trouble since, though that was over five years ago.

Dr. C. F. Milligan (Clayton) thought that more attention should be paid by the general practitioners to the mild cases, inasmuch as the majority of such cases did not come to the specialist, and yet if they were left without care, would soon go to seriousness.

Dr. A. B. Stewart (Raton) in speaking of the effect of heart disease in childhood, referred to Dr. Still of London, as perhaps the greatest authority

on this subject and recommended a recent book by Dr. Still on the subject.

Dr. J. R. Lemmon (Amarillo, Texas), thought that doctors as a whole, especially general practitioners, are not enough "sold" on the idea of preventive medicine and the sooner we are "sold" on this important part of medicine, the sooner we are going to be able to attain results and satisfy the laity. He believed unquestionably that tonsillectomy aids the average choreic child.

Dr. Wylder, in closing, thought Dr. Britton had answered fully Dr. Vickers' questions in regard to tonsils. He also referred to Still's work, but stated that Still does not advocate tonsillectomy as much as we do in this country, because he has said that a child should be sent to the seashore and on ocean trips before you take the tonsils out, which is certainly not done in this country. "In any unexplained diarrhea, look at the mastoid and the cause will be found and if you will puncture the eardrum the diarrhea will clear up."

Dr. Frank N. Allen, of the Mayo Clinic, Rochester, Minn., spoke on "The Treatment of Diabetes," citing the steady increase in the incidence of diabetes in that cases are now being reported more and more, and ascribing this to possibly better diagnosis. "Statistics for age groups show there has been a decided reduction in the deaths of children and young adults, but this has been offset by increases in deaths of older people from diabetes." He stressed the importance of the use of insulin in treatment of the disease and the immense advantages to be derived therefrom, quoting statistics as to the reduction of incidence of coma, which in 1924-25 reached 48 per cent of all cases, whereas in the early part of 1929, it had fallen to 41 per cent and in a more recent series, to 37 per cent.

In the discussion, Dr. F. D. Vickers (Deming), told of difficulties encountered with some of his patients when put on a diet, the importance of which they could not or would not comprehend. He mentioned one case in particular where it became necessary to amputate a leg because no attention had been paid to dietetic instructions, stating that this procedure at least effected increasing respect for the prescribed diet.

Dr. R. J. Groom (Santa Rita) asked in regard to the management of diabetic cases with gastric upset.

Dr. F. M. Heller (Peublo, Colo.), cited a recent case in which the urine was sugar free, yet the blood was up very high and asked Dr. Allen to tell something about those cases in which the urine does not give any indication of the gravity of the situation.

Dr. R. O. Brown (Santa Fe) said he had one patient whose case bothered him considerably, because of showing sugar in the urine one day and the next day being sugar free.

Dr. Allen, in closing, explained that if sugar is found in the urine, it nearly always indicates diabetes, and the patient should be so advised and instructed to restrict his diet to such an extent as might be necessary to keep the urine sugar free. If the urine is free from sugar, and is kept free from sugar, one can be assured the patient will maintain good health and can be satisfied there is no immediate danger. While desirable, of course, to keep the blood sugar normal if possible, yet under ordinary circumstances if the urine is kept sugar free there is no danger and the urine test is dependable. One might subject a patient with a mild diabetes to a very strict diet and treatment with insulin in order to get the blood sugar normal and yet not make them feel any better or perhaps prolong their lives any more. The most serious thing is the development of acidosis. Any person with diabetes may develop acidosis if the condition

is aggravated by complications, but acidosis will not occur if the urine is kept sugar free. Gastric disturbance may complicate ordinary dietary management, but one can plan a diet to suit any circumstance other than diabetes which might arise, and if necessary one may provide a patient with any sort of food which his system can tolerate. If necessary to use a more liberal allowance of carbohydrates, one can do so, making use of enough more insulin to keep the urine sugar free. One does not need to let dietary treatment of diabetes interfere with dietary treatment of other conditions.

Dr. Stuart Pritchard of the Battle Creek (Mich.) Sanitarium, presented a paper on "The Significance of Hemoptysis," of which he and Dr. J. K. M. Gordon were co-authors. The doctor felt that he was no stranger, he said, but rather one of the regular fellows, since this was his ninth visit before societies in the southwest. He reported the spitting or coughing of blood in greater or lesser quantities a frequently observed phenomenon, but that there are few symptoms which may have a more varied origin, and therefore it is important not to come to any hasty conclusion in the presence of hemoptysis, whether scanty or profuse, temporary or constant, but rather endeavor to differentiate the actual underlying cause by a process of elimination.

The most prominent disease conditions which may have blood spitting symptoms were mentioned as: Lung disease,—with which probably nine-tenths of the cases of hemoptysis are associated, and especially with pulmonary tuberculosis; Heart and vascular diseases; Conditions in the upper respiratory tract; Parasitic diseases. Miscellaneous causes,—such as purpura, scurvy, pernicious anemia, leukemia.

Treatment in nontuberculous pulmonary diseases depends upon the degree of hemoptysis and the nature of the underlying cause. Astringent and coagulating drugs may be used to control the bleeding, adrenalin as an astringent being recommended by some, hypophyseal medication, gelatinized serum, by others. In moderate hemorrhage, a hypodermic injection of morphine, gr. 1/6 to 1/4, with atropin, pr. 1/200 to 1/150 is a quick and most reliable remedy. When bleeding persists in spite of absolute bed rest with shoulders elevated so that expectoration may be accomplished with the least effort, surgical methods should be adopted at once, such as pneumothorax or phrenicotomy.

In announcing the opening of the discussion, Dr. R. O. Brown (Santa Fe) stated that in his opinion a history of blood spitting is a matter of great importance and that he always so considers it.

Dr. F. D. Vickers (Deming) voiced the belief that the physicians in the Southwest are prone to believe all cases of blood spitting to be from tuberculosis when very probably some are not.

Dr. J. M. Britton (El Paso) related that many patients apply at the office for treatment, stating they had just had a slight hemorrhage and think it came from the nose. However, he does not find one in one hundred cases, that comes from the nose or throat, and if such cases were watched, he believes they would turn out to be tuberculous.

Dr. R. J. Groom (Santa Rita) cited a very interesting case of a woman with tuberculosis, who at each menstrual period stayed in bed a number of days with cramps, nausea and vomiting, and lost as much weight at those times as she gained between periods. It was deemed advisable to bring about menopause by means of the x-ray, after which she became an arrested case. Two years after being pronounced arrested, she returned to her old home for a visit and while there began spitting up blood, and so returned west in a hurry. However, nothing was found by physical examination or x-ray to account for the bleeding. Twenty-



eight days after she repeated the process and for the following year and a half, it was repeated at similar intervals. It was never possible to locate a cavity or any chest findings whatsoever that would account for it.

Dr. F. M. Heller (Pueblo, Colo.), referred to a number of cases of mycotic infections, in which a blood-stained mycotic mucus was raised, also stating that many people come to Colorado for tuberculosis who have a mitral stenosis which is of the type of large heart on the left side, in most of which cases there is a blood-streaked sputum in the mornings.

Dr. A. J. Streit (Amarillo, Texas), stated that in Amarillo very few cases of tuberculosis are seen, but once in awhile persons will come into the office complaining of spitting of blood. He recalled one or two cases with mild bleeding from the septum and from the turbinates, some from the tonsils and one case where it was from the upper part of the larynx.

Dr. Pritchard had nothing to add by way of closing the discussion.

Dr. R. J. Groom (Santa Rita) spoke on "Vincent's Infection," which includes, he asserted, "more than Vincent's angina and is an inflammatory lesion due to infection by the Plaut-Vincent fusiform bacillus and spirochete. While usually a disease of the mouth, Vincent's organisms normally inhabit several other locations and can produce lesions in any of these areas. Characterized first by an inflammatory process, later by the formation of a pseudomembrane, in the still later stages they produce a sharply defined ulceration with a characteristic punched-out appearance. Dr. Groom named as the principal habitats of the fusiform bacilli:

1. That crypts of the palatine tonsil.
2. Tartar deposits on the teeth.
3. The smegma in the preputial sac and from about the clitoris.

4. And possibly in the intestinal tract.

Lesions produced are:

1. Oral Passages: Vincent's angina; noma; pharyngo-mycosis; pyorrhea alveolaris; ulcerative gingivitis, or trench-mouth.

2. Respiratory Tract: Pulmonary gangrene; pulmonary abscess (following tonsillectomy); pneumonia; perforating lesions of the trachea or bronchi; foreign bodies in the air passages, or other pulmonary infections.

3. Cerebral Lesions: Metastatic putrid brain abscesses, complicating putrid bronchiectasis.

4. Ear: Mastoiditis infection of the middle ear and sinuses.

5. Bone: Osteomyelitis of the inferior maxilla.

6. Lymphoid Tissue: Enlargement of the cervical and mediastinal glands.

7. Blood: Infectious monocleosis.

8. Genito-Urinary: Gangrene alanitis.

9. Miscellaneous: Gangrenous infections of the fingers; cholecystitis.

Symptoms which vary with location of the infection and severity of the lesion are usually malaise and fever in acute cases, rapid pulse, loss of appetite, disturbance of digestion, severe pain in swallowing. The ulcerated surface bleeds easily. The involved area is inflamed and swollen; later becomes covered with a white or grey loose thin coating, thick pseudomembrane, white to reddish brown with peculiar offensive odor, enlarged lymph glands, gingivitis, balanitis, bronchiectasis and pyorrhea alveolaris.

The chief lesions to be differentiated are diphtheria, tuberculosis of the throat, acute tonsillitis, and septic sore throat. Interesting case reports were also given by Dr. Groom, the treatment re-

commended being sodium perborate, arsphenamines and bismuth.

Dr. M. K. Wylder (Albuquerque) in the discussion told of a case he had, a boy 12 years old, with typical Vincent's. With sodium perborate, the throat cleared up, but a few weeks later he developed post-diphtheritic neuritis.

Dr. A. J. Streit (Amarillo, Texas), said he considered any case very suspicious in which there had been a sore mouth for four or five days, and stressed the necessity for better hygienic conditions and cleanliness.

Dr. J. M. Britton (El Paso, Texas), stated he had encountered a lot of cases in his practice and that treatment with 10 per cent copper sulphate in nearly every instance afforded almost immediate relief.

Dr. J. R. Lemmon (Amarillo, Texas), told of a series of cases treated with normal salt solution, another with sodium perborate and another with arsphenamines, those treated with the normal salt solution recovering as soon as the other cases.

Dr. F. D. Vickers (Deming), referred to a dentist friend who treated many cases of trench mouth with perborate of soda, with much success.

Dr. Groom, in closing the discussion, stated there was still a question in his mind as to whether the cases are post-diphtheritic neuritis or Vincent's acting the same way.

Adjournment.

## SECOND DAY—JUNE 5, 1930

### Morning Scientific Session

The session was called to order at 9 a. m., by the President, Dr. R. O. Brown (Santa Fe), the opening paper being by Dr. C. B. Francisco, Kansas City, Mo., on "The Management of Industrial Injuries."

The doctor referred to this as a "speed age," and as the practice of medicine has been caught in the demand for greater speed and perfection, we therefore as a profession should be aware of this demand. Industry demands that quicker results be obtained in the treatment of injuries with the minimum amount of resulting disability. Therefore the most important factor in speeding up end results in injuries is the prevention of infection.

In the management of lacerated wounds, first should come the welfare of the patient, which necessitates controlling of shock. Shock is the result of hemorrhage, cold and pain, either singly or combined, which agents must be controlled if shock is to be prevented. All of these conditions lower blood pressure and if pressure of the blood is allowed to remain under 70 for more than three or four hours, naught can be done to save the patient's life. When the factors that produce shock have been controlled, the wounds of the soft parts and of the bones should be considered. In severe cases an anesthetic should not be given; the pain should be relieved by blocking the tissues with novocaine and the giving of morphine, then scrub the wounds vigorously and continuously for 15 or 20 minutes with soap and water, after which trim off all portions not showing evidence of ample circulation. The fracture, if one exists, should be approximated, the wound packed with sterile vaseline gauze, and a plaster cast applied to secure complete immobilization. The wound should not be disturbed for three or four weeks.

Dr. Francisco described methods of handling lacerated and contused wounds of the soft parts; lacerated wounds that extend into the joint surface; complete fractures of the upper third of the femur below the trochanter; fractures of both bones of the forearm in the lower third; simple fractures of both bones of the forearm in the lower third;

simple fractures of the tibia and fibula; fractures of the olecranon in the upper third; and comminuted fractures of the head of the humerus.

The next speaker, Dr. J. W. Hannett, Albuquerque, N. M., had as his subject, "The Treatment of Injuries in the Cranial Contents." The doctor declared that few will disagree that traumatism to the head requires closer observation and riper judgment than injury to any other anatomical region. With the exception of the manometer there is no instrument of precision to help us. The x-ray may or may not show a cranial injury, but it reveals or may not show a cranial injury, but it reveals nothing as to what has happened to the cranial contents. He described a number of cases under treatment, advising that the type of case to consider more fully is the one that is unconscious when first seen or wherein all of the grosser symptoms are increasing either rapidly and abolished reflexes that does not need a decompression. Conversely, an unconscious patient with a slow pulse rate, high blood pressure and increased manometer reading should be decompressed not only to prevent death from medullary compressions, but to avoid meningeal and cerebral changes should death not ensue. With careful observation these two types of cases should be differentiated. Dr. Hannett warned against complete reliance upon manometer readings, but concluded that many serious head injuries can be saved from death or serious sequelae by using modern methods of diagnosis with proper medical and surgical treatment.

The general subject of injuries was concluded by Dr. J. B. Hartwell, Colorado Springs, Colo., who spoke on "The Diagnosis and Treatment of Fractures of Transverse Processes of Lumbar Vertebrae." Dr. Hartwell cited a number of interesting case reports and summed up as his conclusions:

1. Fractures of the transverse process of the lumbar vertebrae are fairly common and industrial workers are especially liable to this injury. The injury is disabling.

2. Pain in the back is the only constant symptom.

3. Localized tenderness over the fracture site is the only constant sign.

4. Stereoscopic x-rays should be obtained in suspicious cases, but care is necessary in interpreting them.

5. Operative removal of the loose fragment is the treatment of choice because it shortens convalescence and because the end results seem certain and are good. If conservative treatment is chosen, operation should be advised in all patients whose back pain persists after ten weeks.

Dr. P. G. Cornish, Jr., (Albuquerque) who opened the discussion of the series of three papers, was particularly impressed with Dr. Francisco's conservative treatment in his fractures and his advocating the use of judgment and brains rather than a lot of mechanical appliances that are supposed to apply universally to all types of fractures. Dr. Hartwell's cases impressed him particularly from his radical treatment. In his own practice, he advocated treatment by conservative methods—rest in bed for varying lengths of time, the getting them out of bed and on their feet again. In most cases they had been able to return to hard work in five to ten weeks.

Dr. W. L. Brown (El Paso), enjoyed all three papers, thought them very important, but for himself has not been able to subscribe to the method of leaving the compound fractures strictly alone, believing in temporary fixation. He told of a case seen, a policeman with a compound fracture of the leg, with terrific infection, the foot being greatly swollen and discolored, in which he suggested temporary fixation, but the attending physician demurred, stating he was afraid of possible criticism.

Dr. Brown was willing to take whatever criticism might arise, so went ahead and as result of the fixation, in 24 hours there was marked improvement. Some eight or ten months later, a bone graft was done with perfect success.

Dr. A. E. Hertzler, Halstead, Kans., supported Dr. W. L. Brown's contentions as to the use of plates in compound fractures, stating that this method had been used by him for many years, and that in case grafting became necessary later, everything was in fine position for it, and that in many cases grafting is not necessary because the place has healed and one only has to take out the plate.

Dr. C. H. Churchill, Madrid, N. M., asked Dr. Francisco if there were any objections to using antiseptic solutions in hot applications for wounds, stating he was very much in favor of using hot moist applications and always keeps some kind of antiseptic solution on hand, and that he has never found any trouble arise from their use.

Dr. Crum Epler (Pueblo) expressed his appreciation of three papers, stating that during the war a class of bone setters developed who have carried on since; and also at that time there developed efficiency experts in all walks of life, and that he saw in these three papers, evidence of efficiency experts, or in other words, anatomical knowledge, pathological fact and good sound common sense. He referred to the fact that he and a few of those present, had practiced a long time before the advent of the x-ray, and set fractures then with good results so far as function was concerned—as good as at the present day, not always of course, but speaking generally. In industrial work, the thing we are after is based strictly on the business end of life, namely a result that has an economic value to the patient, makes him capable of having three-fourths or all of his function if possible and the remainder is to get him out at work as soon as possible. So far as antiseptics are concerned, he does not believe much in antiseptics in these compound fractures. Cleanliness is most essential and cleanliness is next to godliness.

In closing the discussion, Dr. Francisco emphasized one point—the giving of antitoxin. As to antiseptics he thought boric acid or some alkaline solution, as of distinct value.

Dr. Hannett stressed the effects of head injuries, so often overlooked because accompanied by other injuries, such as fractured pelvis, broken jaws, or injuries to the chest, and urged more thorough examinations.

Dr. Hartwell stressed the point that he was discussing uncomplicated types of cases and that cases subjected to his radical treatment for a period of from two to six years are free from pain, whereas other cases while perhaps possible to go back and take up the job in a shorter length of time, if followed over a period of months or years, would show more or less pain and distress.

The next speaker, Dr. O. H. Brown, Phoenix, Ariz., gave an extemporaneous talk on "Food Sensitizations and Their Treatment." He urged the importance and necessity of ascertaining the sources or objects of allergies and spoke on the type of food protein that produces asthma.

Discussion was opened by Dr. J. R. Van Atta (Albuquerque), who reported that in his hands no type of acid has seemed to help asthma in chronic cases, but he was delighted to hear that Dr. Brown is getting good results with diet and the use of some acid at meal time in early asthma.

Dr. J. R. Lemmon (Amarillo, Texas), referred to the infant as the best model of observation for food sensitization, observing the conditions following change of diet, thereby readily ascertaining those dishes causing gastric distress and colic.



Dr. M. K. Wylder (Albuquerque) said the subject was a most interesting one to him, as he had been a sufferer from hay fever for many years. He told of beneficial results ensuing from the use of lactic-acid milk for babies and asked Dr. Brown to state whether he has noticed any relation between protein sensitization and rheumatism, referring to Swift's recent work in which he brings forth the idea that a great many of inflammatory rheumatism cases are an allergic sensitization reaction, due to reaction from streptococcus.

Dr. R. H. Finney, Pueblo, Colo., stated he was very much interested in the subject and thought Dr. Brown deserved much praise for specializing in such work. Many of these cases come for help and relief after suffering for years and it is necessary for the doctor to treat, experiment and work them out, and in the end if he has accomplished wonders, he receives a fee perhaps of only a few dollars, yet has done something compared with the bone men, who put in a drill and receive a fee of \$150, so men who work along these lines surely deserve a great deal of credit and praise.

Dr. F. D. Vickers, Deming, N. M., told of a case he had, wherein the patient suffered what seemed to be periodic attacks, with intestinal upset, fever, malaise, etc., which, when finally worked out was found to be due to eating fried chicken.

In closing the discussion, Dr. Brown in speaking of acids, thought hydrochloric the most essential, though dentists say it is hard on the teeth. Lactic acid in baby feedin is particularly important, and they have less eczema with that sort of diet. Allergy is a local reaction, while anaphylaxis is general. The doctor recalled a case of extremely severe eczema in a baker and suspected it was due to wheat. The baker was broken out from the top of his head to his feet. He was put on a dozen or more tests, among which was wheat, but did not react a particle. However, from the history of his having handled wheat all the time, he was told to lay off wheat and in a week he was practically well.

One day he went out and picked up an empty flour sack and in five or ten minutes was broken out all over with urticaria. He was told to be careful in regard to handling wheat and to be sure and eat rye bread, but one day came back again all broken out and finally admitted having used white flour. After a few weeks on a very carefully excluded diet, he became better and in five or six weeks the wheat tests were tried again, this time with reaction. Dr. Brown expressed the belief that the arthritis deformans type is a sensitization, probably more food than anything else and stated that if Dr. Wylder will put himself on large doses of acid, he may improve his hay fever. He mentioned the first case in which rheumatism was called to his attention, being that of a young woman whose physician had been giving her salicylates. It was found that she had been eating citrous fruits, of which she was very fond, and when told to discontinue same, became well after three or four days. While getting the acid, she was probably not getting enough of protein. "In prescribing acid, I give it well diluted in a glass of water, to be sipped while eating. In foods like salads that have acid put on them ahead of time, this is a very good plan. One patient with a colitis, a tuberculous individual, always does better on a milk diet, but if he takes rawmilk, it makes his colitis worse. He improved very much after mixing acid with milk.

"One of the doctors said something about discouragements. I have worked on this subject for about twenty years and have had a great deal of discouragement, but the last few years have been very encouraging and we have achieved results through diets. Have the patient keep a diary of

all the foods he eats. Have him note the results after breakfast, likewise after dinner and after supper. If he keeps this up over a number of weeks, he himself will see that every time he eats such and such a dish, his condition becomes worse. This, supplemented with a study of the case, should enable one to establish the source of infection and overcome it."

Adjournment for luncheon.

#### Meeting of House of Delegates

Meeting held at Hotel Swastika, called to order at 1 p. m. by the president, Dr. R. O. Brown (Santa Fe.)

Members present: Drs. Brown (Santa Fe); Cohenour (Albuquerque), Cornish, Jr. (Albuquerque); Wylder (Albuquerque); Groom (Santa Rita); Joyner (Roswell); Milligan (Clayton); Stewart (Raton); Vickers (Deming).

Election of officers was pronounced in order, with candidates for offices of

President-elect: Dr. Wylder (Albuquerque) was nominated by Dr. Joyner; seconded by Dr. Vickers.

Dr. F. D. Vickers (Deming) was nominated by Dr. Wylder; seconded by Dr. Groom.

Motion was made, seconded and carried that nominations be closed.

Dr. Vickers stated that in view of the fact that it was very probable the next meeting would be held in Albuquerque, in his opinion it would be a great advantage to the society, if the president-elect were a resident of that city and he therefore requested that his name be withdrawn. The request was deemed out of order.

Vote by ballot resulted in: Dr. Wylder, 4; Dr. Vickers, 3.

Vice President: Dr. F. D. Vickers (Deming) was nominated by Dr. Wylder; seconded by Dr. Stewart. Dr. Milligan's motion that nominations be closed was seconded by Dr. Stewart and unanimously carried.

Secretary-Treasurer: Nomination of Dr. L. B. Cohenour (Albuquerque), present incumbent, was made by Dr. Groom, seconded by Dr. Cornish, Jr. Dr. Joyner's motion that nomination be closed was seconded by Dr. Wylder and unanimously carried.

Members of Council for Three Years: These to replace Dr. W. T. Joyner (Roswell), Dr. A. H. Miller (Clovis), whose terms expired, and to fill unexpired term (one year) of Dr. Dwight Allison, (formerly Las Cruces), removed from state.

Motion of Dr. Wylder that Dr. Joyner and Dr. Miller be re-elected as members of the council for three years was seconded by Dr. Cornish, Jr., and unanimously carried, as also was motion that Dr. C. W. Gerber, Las Cruces, be elected to fill unexpired term of Dr. Allison.

Delegate to A. M. A. Meeting: Nomination of Dr. H. A. Miller (Clovis) was made by Dr. Groom, seconded by Dr. Vickers. Dr. Cornish, Jr. moved that nominations be closed, seconded by Dr. Stewart and unanimously carried.

Alternate to A. M. A. Meeting: Nomination of Dr. W. J. Latta (Wagon Mound), was made by Dr. Cornish, Jr., seconded by Dr. Vickers and unanimously carried.

Members of Board of Managers, Southwestern Medicine: Dr. F. G. Cornish, Jr. (Albuquerque) was nominated by Dr. Joyner.

Dr. A. B. Stewart (Raton) was nominated by Dr. Wylder. Motion that nominations be closed was made, seconded and unanimously carried.

Meeting place, 1931: Motion that Albuquerque, N. M. be the next meeting place was made by Dr. Vickers, seconded by Dr. Stewart, and carried without dissenting vote.

The president remarked that if the society as a whole desired action in a legislative way on a basic

science measure, it would be well to get busy before the start of the nominating convention. The subject was discussed generally in an informal way with result that motion was made by Dr. Joyner, seconded by Dr. Stewart and carried that the house of delegates recommend to the general session, the adoption of a basic science law, that the president be authorized to appoint a legislative committee of three members, and also that he be authorized to expend the sum of \$500, if deemed necessary in his judgment, in this connection.

The annual registration of doctors in New Mexico was a topic brought up by Dr. Joyner for discussion, but owing to lack of time, no action was taken and adjournment followed at 1:30 p. m.

#### AFTERNOON SCIENTIFIC SESSION

Dr. A. E. Hertzler (Halstead, Kans.), requested permission to change the subject of his paper, which had been given out as "Diagnosis of Osteomyelitis," "Uterine Hemorrhage" and rendered a very interesting discourse thereon.

Dr. R. O. Brown (Santa Fe) stated that he had enjoyed Dr. Hertzler's talk immensely and was very glad to hear his stand as to the use of radium.

Dr. Crum Epler (Pueblo, Colo.) said that he was much interested in the subject but did not feel that he could intelligently discuss it.

Dr. P. T. Cornish, Jr., (Albuquerque), also expressed his appreciation of the paper, but did not believe he could add anything worthy of note.

Dr. James F. Percy, Los Angeles, Cal., spoke on "The Cautery Treatment of Carcinoma above the Clavicle," exhibiting stereoptican and motion pictures, to illustrate his work.

In the discussion Dr. O. H. Brown (Phoenix) stated that he had been one of a committee in Phoenix, delegated to review the literature on the subject of cancer and the feature most outstanding in all articles was the repeated warning not to transplant cancerous cells. That impressed him as one of the most important points in Dr. Percy's method when he first heard him lecture on the subject and he will make it a point when in Los Angeles to see Dr. Percy at work.

Dr. W. L. Brown (El Paso) told of his interest in Dr. Percy's cautery work, which he has been following for a good many years, and praised his achievements, saying "The doctor has certainly shown a tremendous amount of enthusiasm and done some wonderful work with these apparently hopeless, helpless, agonizing cases, and I have a great respect for him and for his work."

Dr. P. G. Cornish, Jr., (Albuquerque) asked if in cases of the kind illustrated Dr. Percy depended on his dissection as much as he did on the heat, as it was rather a rapid dissection in which there could not be a great amount of dissemination of heat.

Dr. Crum Epler (Pueblo) stated that he had certainly enjoyed the exhibition and paper; that he, like Dr. W. L. Brown of El Paso, had followed Dr. Percy's work for a long time to some extent, though perhaps not so extensively as Dr. Brown and the impressive thing to him is the standardized belief that cancer, if it is curable, is curable only by enucleation early. The advantages of this method are due to heat and lack of hemorrhage, but it is well recognized that if you cure cancer, it must be done early and by enucleation.

Dr. A. E. Hertzler, (Halstead, Kans.), said he thought Dr. Percy was right. "Take particularly carcinomas that are approaching the skin. You think you are beyond, way beyond, inches beyond the infiltrations in the skin. You take cases of breast tumors where the skin is infiltrated; you take off the skin; you can section it and see the invaded cells and yet in a few months you will find

little nodules in the skin beyond your line of incision. Now how in thunder do they get through? I know when you cut the skin with this cautery you do not have them. I have to concede that much. There is something that happens. Do they escape through the lymphatics? The cautery is of tremendous value and there is no question about it. I am not so convinced of the value of it in blocking out gland muscles in the neck. My experience in that regard has not been very good perhaps. I may not have timed it right, but that part I do not quite follow. As a matter of fact, after seeing these tremendously big operations which Dr. Percy has been showing, I believe after all a person has a certain obligations in supplying golden rule, and for me, if I get a mass like one of these that has been shown, I hope Dr. Percy will shoot me and not use his cautery."

In closing the discussion, Dr. Percy stated that he was grateful for the comments, "that it has already been said we do not transplant cancer cells and as everybody knows this is not true in a cold steel knife operation. No man knows whether he has struck a little nest of cancer cells infecting the edge of his knife and has transplanted these cells everywhere else. But suppose you do have that following a knife operation; suppose the woman is going on to die. Don't think of that. Take my lead-pencil tip cautery, cover the woman's eyes, get that cautery hot enough so it will not hiss, put right on the mass and go through with it. I had a woman who was operated on with a cold steel knife. She came to me when she had a recurrence and I used the cautery. It is now twelve years since I treated her and she is still alive. We never know—we do not know anything about cancer. Cancer is a queer thing. The most hopeless cases we can sometimes help, and though we talk about the advantages of getting them early, I have had some of my worst results in some of my early cases and have had them coming in when they are stinking, bleeding, hemorrhaging all the time, and these people suffer a while and yet sometimes be alive five years or more afterwards. I was very glad one of the doctors brought up this question of rapid dissection. That is the fault of the camera. As a final word—do too much rather than not enough in the treatment of cancer."

Dr. F. E. Deemer, Denver, Colo., gave an extremely interesting talk on "Post-Operative Atelectasis and Pneumonia," which aroused considerable discussion and Pneumonia," which arouse considerable discussion and comment.

Dr. R. O. Brown (Santa Fe), stated that he liked the term "pneumonitis," but did not understand whether in these cases there is a sudden consolidation of a whole lobe or not.

Dr. F. M. Heller, Pueblo, Colo., expressed his enjoyment of the subject, but that speaking from the standpoint of x-ray diagnosis, Dr. Deemer was not taking any pathology of pneumonia that he understood.

Dr. C. Ernest, Pueblo, Colo., had the opinion that some of the cases no doubt showed other symptoms immediately after operation, stating that some are relieved almost immediately after bronchoscopy and others equally quickly after operation; that it does not take a very hard operation to determine some of the various types and the thing to do is to examine the sinuses carefully before operation.

Dr. R. H. Finney, Pueblo, Colo., asked Dr. Deemer how he considers lobar pneumonia and what would be the cause of the blocking? "Take an acute infection," he remarked, "a man working at his usual work becomes ill all of a sudden with lobar pneumonia, not post-operative, not with a cold, but with a bloodstream infection. He must consider



probably there is a plugging after the infection has taken place. Then this also brings up the subject of using carbon dioxide and then continuing the process throughout a day or two for twenty minutes at two to three hours intervals, which I expect is a very good procedure, as they are using that procedure in many of the surgical clinics to prevent the formation of this plugging."

Dr. Deemer in closing the discussion stated that there are a good many people who have seen the bronchoscope who figure that the strangling the patient gets from it does just as much good as the plug. They have a motor-driven suction apparatus like a tonsil machine, a suck out plug, but usually the patient coughs out the plug. "As to the benefits of carbon dioxide, it increases the breathing and cough reflex, allows the patients to breathe deeper and more rapidly and makes them cough more readily, and then, too, it is soluble to the tender mucosa. The lungs are a muscular organ. There are involuntary muscles in the lungs, from the trachea clear out to the alveolar. I want to bring out again and make it forcible that there is no such thing as post-operative pneumonia. Another thing I want to emphasize and that is anything that will stop the cough reflex, any narcotic, should be given with extreme care, post-operative. I always consider true lobar pneumonia as atelectatic at the beginning. There is a question up in literature as to whether or not primary pneumonia is not broncho. In a vast number of men, perhaps some 18,000 I looked at during the war, I found many hundreds of cases of either atelectasis or bronchopneumonia, who were walking around the camp and doing their duty. In some of the lobar pneumonitis cases you may have the crises on the third day, others not until the fifth day. There is a reason for it which should be figured out. What I wanted to bring out were the different types of atelectases and star every body thinking along those lines and perhaps help us all. While having had only 24 cases, I think, however, that is sufficient to cause a lot of comment. I have investigated cases of bronchopneumonia with atelectasis, in which there have never been indications of sinusitis."

Adjournment until 9 a. m., June 6, 1930.

### GENERAL SESSION

A meeting of the General Session was held June 5, 1930, directly after the close of the Scientific Session, President R. O. Brown, Santa Fe, presiding.

After call to order, report of the House of Delegates was read by the secretary, Dr. Cohenour and motion that the report be approved as read was made, seconded and carried.

In regard to the recommendation that a Basic Scientific Law be urged, the president stated that it was the intention of the House of Delegates to submit the idea to the Society at its general meeting for its action; that it was not the desire of any one in the House of Delegates, or he himself to start anything that the Society might not want; personally he believes in a Basic Science Law and believes that such a law can be secured if it is gone about properly. Going about it properly means that there must be some interest taken by the Society and the County Societies in securing such a law. If a little preliminary work is done by the committee, the actual work will not be very heavy. However there is no use in starting anything in the legislature that the Society as a whole does not endorse or think is a good thing, or get something we might not want.

Dr. Stewart (Raton) suggested that the matter

be discussed tomorrow at the General Session when there would probably be a larger attendance, as there might be a number of men present then who would want to express their views on the subject.

Dr. M. D. Gibbs (Roy) stated that he thought the laws of New Mexico could be improved and that it is to the interest of all members of the Society to see they are improved. The Basic Science Law, as he understands it, would require any one who is practicing the healing art to have a knowledge of anatomy and physiology, at least those two, and perhaps chemistry. That would be questionable, as some of the cults do not use medicine at all and they would get up the argument that they would have to learn chemistry which they would have no use for. There could, however, be no definite or reasonable argument that they should not have knowledge of at least anatomy and physiology. "These would be essential to my mind and my idea would be that the president instruct the members of the Society to as a committee of one in his home town and county and in the interim before the election this fall get in touch with prospective candidates, ascertain their attitude and state we want them to work for a medical law if elected. Perhaps one or two medical might be elected and that would help."

Dr. Brown: That is my idea also of what should be done but I think we should talk it over at another time, since this meeting was considered more of a business session.

Dr. A. B. Stewart, Raton: "I make motion that an open discussion of the Basic Science Law be considered by the General Assembly tomorrow for a few minutes before adjournment." Seconded by Dr. Vickers and carried.

No further business coming before the meeting, adjournment followed.

Third Day—June 6, 1930

### Morning Scientific Session

The session was called to order at 9 a. m., by the President, Dr. R. O. Brown (Santa Fe), the opening paper being by Dr. F. M. Heller, Pueblo Medical Group, Pueblo, Colo., on "Physiological and Clinical Aspects of Kidney Disease." Dr. Heller carefully described the function of the kidney, advising that one or more of the following clinical signs are always present in kidney lesions:

1. Urinary findings.
2. Edema.
3. Blood pressure—hypertension.
4. Nitrogen retention—blood chemistry.
5. Ophthalmoscopic findings.
6. Uremic.

"The terms 'nephroses, lipid nephrosis, glomerulonephritis, benign and malignant sclerosis,' were defined in detail and the importance of some of our present methods of clinical diagnosis of renal impairment, was stressed.

Dr. R. H. Finney, Pueblo, Colo., in opening the discussion, stated that there has been so much work done in past years in trying to work out classification in the kidney diseases, that it makes it most interesting in physiology. He thought the classification should be made as simple as possible and when it comes to making a diagnosis, he tries to bring it in one of three types:

"1. Degenerative nephritis, which is very broad, acute condition first, regardless of how it gets later. Some of them clear up, never to return again. In that case there is blood and very little else unless perhaps a little albumin. It may be from an acid inflammatory condition, scarlet fever or some streptococcus infection.

"2. Degenerative nephritis, which is very broad but takes in all degenerative conditions. In this, degenerative debris is found in urine but no blood, rarely red blood cells. It include Bright's disease of pregnancy and there are many others intermingled with this degenerative type. I usually call them degenerative nephritis and let it go at that.

"3. Aterio-sclerotic nephritis, in which some albumin, sometimes some little hypertension and arterio-sclerotic changes are found throughout the kidney. There are no red blood cells and no degenerative cells to amount to anything.

"These are the three types used by me in a diagnostic standpoint."

Dr. J. F. Percy, Los Angeles, Cal., asked Dr. Heller if he had made any study in regard to the relationship of lipoidal nephritis to the so-called nephritis of Epstein, and whether or not these two conditions bear any relationship to each other, stating that he had published two papers in 1912 and 1913, in reference to the relationship of the thyroid to changes found in the kidney. "The only treatment for such cases is the administration of very large doses of thyroid extract. In my own mind, the nephritis of Epstein is nothing more or less than what has been mentioned under the general term of nephritis."

Dr. Heller (closing): In regard to the nephritis of Epstein, he classifies all nephroses together. To say that this case is lipoid nephritis, or just what kind is very difficult. Some of these cases become remarkably improved after treatment with thyroid extract, sometimes being discharged as well; other cases treated that way show no improvement. The interesting feature under study at the present time is to decide whether the process of nephroses is one in which pneumococcus is an attributing factor.

Dr. Donald G. Tollefson, Los Angeles, Cal., in an interesting paper entitled "Hysterectomy" reviewed his findings in an analysis of 604 cases, which he grouped into four divisions:

1. The preoperative status of the patient, including age incidence, marital state and pregnancies, symptoms and previous operations.
2. Operation—describing pathology, type, technique and associated pathology.
3. Postoperative complications and morbidity.
4. The immediate mortality and convalescence, with review of a follow-up system.

His conclusions were:

"Hysterectomy in all types of cases should not carry a mortality greater than 25 per cent. In some series of fibroids, it should be considerably less.

Even in the most careful aseptic technic, incidence of wound infection will be high because of the frequent existence of low-grade pelvic infection.

"Careful preoperative study and improving the general condition of the patient is more important than the rapid carefully executed hysterectomy.

"Ovaries should be retained whenever doubtful diseases exist. The cervix should be cared for at the time of operation. Miscellaneous symptoms and palpable tumors should not be indication for operation."

Dr. W. J. Latta, Wagon Mound, N. M., stated that he perhaps saw the first hysterectomy that was successfully performed west of the Alleghany Mountains. "This was in 1874 and was performed by a doctor who had very little experience in these things, but the patient made an uneventful recovery and I remember I saw her forty years later and asked her as to the effect of the operation. She replied that it made such an enormous change in her general outlook that she would rather have died than not had the operation."

Dr. P. G. Cornish, Jr., Albuquerque, N. M., expressed his interest in the analysis of these hys-

terectomies, remarking that the mortality and morbidity is very low, and that to his mind the percentage of wound infections is probably due to infection in the cervix. Personally, he sees no particular advantage in leaving the cervix open and likes to get it closed as soon as possible.

Dr. Tollefson in closing the discussion stated that leaving the cervix exposed is probably one of the factors in wound infection; however, every attempt is made to keep anything threatening away from the cervix stump and we do not have very many on that account, but still have quite a few infections existing in the pelvis.

Dr. W. F. Martin, Battle Creek Sanitarium, Battle Creek, Mich., in a paper entitled "Some Urological Problems of Interest to the General Practitioner" emphasized the importance of the immediate recognition of urological symptoms, the accurate determination of their causes and an early therapeutic attack. He discussed hematuria, naming various diseases as a possible cause, but stressing the fact that in 80 per cent of all cases, tumor, stone and tuberculosis are the existing phases tumor taking first place as the most frequent cause and hematuria as the one urological symptom which should never be disregarded. Pain was next discussed, its causes and symptoms, but as a symptom in diseases of the urinary tract, this is in many cases very misleading, the doctor stated, and therefore responsible for many errors. When severe, it is demanding and impels the patient to seek immediate relief and medical aid, but unfortunately the lesions which cause the severe pain are the least imperative so far as the need for radical removal is concerned. The more serious lesions, as tuberculosis, neoplasm, etc., may develop insidiously for months to years with an entire absence of pain. Frequently major kidney diseases are accompanied by pain referred to remote parts and simulate diseases of other organs, particularly the abdominal viscera more often than to the so-called kidney area in the lumbar region. The distension of the renal pelvis and ureter with pyelographic media in making routine examinations will, as a rule, reproduce the patient's pain and thus implicate the kidney as a source of that pain, or serve as a strong evidence absolving the kidney in case the pain is not reproduced. Therefore it should be our rule to study the urinary organs in the presence of any pain, the cause of which cannot otherwise be positively proven.

The doctor also discussed dysfunctions of urination, prostatic problems, urinary tuberculosis, submucous ulcers of the bladder and residual urine, his conclusions being:

1. Remember the importance of giving the urinary tract a thorough study when making annual physical examinations of patients.
2. To make such a study includes more than the simple examination of the urine and palpation of the organs.
3. Symptoms are very unreliable and may be misleading and are not to be depended upon for a diagnosis.
4. While certain symptoms may be difficult to explain, the answer may be had by persistent and painstaking efforts.
5. Impending trouble discovered before it becomes imperative is more conservatively and successfully dealt with, than to wait until the condition becomes demanding.
6. One should always think of the urinary tract as a possible source of any pain which cannot be otherwise positively explained.

Dr. Martin was followed by Dr. W. L. Brown of El Paso, Texas, who presented a "Potpourri," as he (Continued on page 450)



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# THE SOUTHWESTERN MEETING

EL PASO, November 6, 7 and 8

It was hoped that completed program could be printed in this issue of the journal, but full details could not be obtained in time, and only general information regarding the speakers and subjects to be discussed are given below. Early in October a copy of the complete program will be mailed to all subscribers of this journal. Make your hotel reservations for the meeting, either through Dr. W. W. Waite, Roberts-Banner Bldg., El Paso, or direct to the Hotel Hussman.

## FACULTY FOR THE CLINICAL CONFERENCE OF 1930.

Dr. Walter C. Alvarez, M. D., Cooper Medical College, San Francisco, 1905; Associate Professor of Clinical Medicine, University of Minnesota Medical School; Member, Association of American Physicians, American Gastro-Enterological Association, American Society for Clinical Investigation; Fellow of American College of Physicians.

Dr. Alvarez did his pioneer work on the physiology of the gastro-intestinal tract in San Francisco, this work attracting so much attention that he was offered important positions with the Mayo Foundation and the University of Minnesota Medical School, where he has been for several years. The subject of his clinical lecture will be "Practical Points in the Treatment of Gastro-Intestinal Disease;" he will present a new motion film of the stomach.

Dr. Willard Bartlett, M. D., Marion Sims College of Medicine, St. Louis, 1895; Assistant Professor of Clinical Surgery, Washington University, St. Louis; Member Southern

Surgical Association; Western Surgical Association, Society of Clinical Surgery, Fellow American College of Surgeons.

Dr. Bartlett is a surgeon of international repute, and will speak on the subject of "Goitre," being a recognized authority on the thyroid gland.

Dr. Joseph Brennemann, M. D., Northwestern University, 1900; Member American Pediatric Society.

Dr. Brenneinan stands high in the field of pediatrics, and is perhaps as well known for his work in the treatment of empyema in children as anything else. Dr. Brennemann will speak on two subjects in clinical lectures; "Acute Abdomen in the Child" and "The Treatment of Empyema in Children."

A clinical period will be arranged in which he will discuss the "Diagnosis of Tuberculosis in Children, with Special Reference to the Interpretation of X-ray Findings."

Dr. Jim Camp, M. D., University of Tennessee, 1900.

Selected as the representative of Western Texas for this program, Dr. Camp will present the subject of "Fractures as Seen by the General Practitioner."

Fractures constitute a subject of perennial interest, and since the great majority of them are seen and treated by the general practitioner or surgeon, this phase of the subject will be of particular interest.

Dr. M. Edward Davis, M. D., Rush Medical College, Chicago, 1923. Assistant Professor of Obstetrics and Gynecology, University of Chicago Medical School; Obstetrician and Gynecologist, Chicago Lying-in-Hospital

and the University Clinics; Fellow of the American College of Surgeons.

Dr. Davis is associated with Dr. DeLee, and will give a clinical address, as well as showing motion picture films illustrating difficult problems in obstetrics. These films attracted much attention at the Detroit meeting of the American Medical Association and are being shown by special request, for the first time in the Southwest.

**Frank S. Dolley, M. D.,** Bowdoin Medical School, Portland, Me., 1911; Thoracic Surgeon for Good Hope Clinic and Cedars of Lebanon Clinic, Los Angeles; Fellow American College of Surgeons; Member American Society of Thoracic Surgery.

Dr. Dolley, after spending several years abroad in study and preparation for his specialty, located on the coast, where he confines his work to thoracic surgery. He will discuss "A Review of the Present Day Surgical Treatment of Diseases of the Chest."

**Dr. Robert S. Flinn, M. D.,** Harvard University, 1927.

Dr. Flinn, the speaker selected to represent Arizona on the clinical program, has become known throughout Arizona for his work in metabolic diseases. He is a speaker of unusual clarity and force and presents his subject well. He will talk on the subject of "Diabetes."

**Dr. George Herrmann, M. D.,** University of Michigan, 1916; Assistant Professor of Medicine, Tulane University; Managing Editor, American Journal of Syphilis; Member, American Society for Clinical Investigation, American Climatological and Clinical Association, American Association for Experimental Pathology.

Dr. Herrmann is an outstanding clinician and internist, particularly well known for his work on the heart. His clinical lectures will be on "The Diagnostic Criteria of Heart Disease," and "The Treatment of Syphilitic Aortic Disease in the Last Stages."

**Dr. Allan Krause, M. D.,** Johns Hopkins University, 1907; Assistant Professor of Medicine, Johns Hopkins University Medical School; Member, American Society for Clinical Investigation; American Climatological and Clinical Association, American Association of Pathologists and Bacteriologists, American Society for Experimental Pathology, Society of American Bacteriologists.

Dr. Krause has recently moved from Baltimore to Arizona, assuming the directorship of the Desert Laboratory in Tucson. He is

well known for his work in tuberculosis, particularly the pathology of the disease.

**Dr. Philip H. Kreuscher, M. D.,** Northwestern University, Chicago, 1909; Clinical Professor of Surgery, Loyola University; Member Clinical Orthopedic Society; Fellow American College of Surgeons.

Dr. Kreuscher is a general surgeon better known for his work in the orthopedic branches. His lectures will be on "Fractures into Joints" and "Backache."

**Dr. James M. Martin, M. D.,** Missouri College of Medicine, St. Louis, 1897; Professor of Radiology, Baylor University, Dallas; President Dallas Southern Clinical Society; Member, American Roentgen Ray Society, Radiological Society of North America, Fellow American College of Radiology.

Dr. Martin is well known for his pioneer and extensive work in radiotherapy. He will present the "Treatment of Accessible Malignancies," illustrated by lantern slides and motion pictures.

**Dr. Alton Ochsner, M. D.,** Washington University School of Medicine, St. Louis, 1920; Professor of Surgery, Tulane University, New Orleans; Fellow American College of Surgeons.

Dr. Ochsner is one of the well known surgeons of America, and will discuss a subject of great interest,—“Acute Craniocerebral Injuries.”

**Dr. Leroy S. Peters, M. D.,** University of Illinois, 196; Fellow of American College of Physicians.

Dr. Peters was selected as the representative from New Mexico on this program. He needs no introduction to the profession of the southwest. He will discuss the "Cauterization of Adhesions—Jacobaeus-Unverricht Method."

**Dr. William Snitzer, M. D.,** New York University Medical College, 1905; Fellow American College of Surgeons; Member American Urological Association.

Dr. Snitzer, of Denver, one of the well known urologists of the country, was selected by the program committee to represent this specialty, and will give a talk on "Pyelctasis (hydronephrosis) and Ureterectasis; Causes and Treatment."

**Dr. Charles T. Sturgeon, M. D.,** University of Michigan, 1904; Assistant Professor of Surgery, College of Medical Evangelists, Loma Linda, Calif.; Fellow American College of Surgeons; Member Pacific Coast Surgical Association.



Dr. Sturgeon practiced in Arizona for many years and has many friends through the southwest; since locating on the coast he has built up an enviable reputation as a daring and original surgeon. He will talk on "Sodium Hmytal for the Preatesthetic Preparation of Surgical Cases."

**Dr. Roy Thomas, M. D.,** Rush Medical College, 1907: Assistant Professor of Clinical Medicine, University of Southern California Medical School; Fellow American College of Physicians.

Dr. Thomas, who practiced for ten years in Phoenix, moving to Los Angeles following his period of service in the World War, is well known through the southwest; he was president of the Arizona State Medical Association in 1916. He is one of the leading internists of the coast, having had charge of the pneumonia service of the Los Angeles General Hospital for several years. He will discuss the "Management of Lobar Pneumonia."

#### PROGRAM FEATURES MEDICINE

**"Practical Points in the Treatment of Gastro-Intestinal Disease."** This will be discussed by Dr. Walter C. Alvarez, of the Mayo Foundation. He will also give a dry clinic on this subject, using lantern slides and a new motion picture showing the stomach, in physiological and pathological conditions.

**"The Diagnostic Criteria of Heart Disease."**

**"The Treatment of Syphilitic Aortic Disease in the Last Stages."** These subjects will be presented by Dr. George Herrmann, Assistant Professor of Medicine, Tulane University.

**"The Management of Lobar Pneumonia."**

This will be discussed by Dr. Roy Thomas of Los Angeles, Assistant Professor of Clinical Medicine, University of Southern California Medical School, Chief of Pneumonia Service of the Los Angeles General Hospital.

**"Diabetes."**

This will be discussed by Dr. Robert S. Flinn of Prescott, Arizona.

#### TUBERCULOSIS

**"Cauterization of Adhesions—Jacobaeus-Unverricht Method."**

This development in the use of pneumothorax, which is attracting increasing attention in the treatment of tuberculosis, will be discussed by Dr. Leroy S. Peters of Albuquerque, N. M.

**"Diagnosis of Tuberculosis in Children."**

This subject will be used by Dr. Joseph Brennemann of Chicago, in a clinic to be arranged by members of the Association in El Paso. Special attention is to be given to the interpretation of the x-ray findings.

#### SURGERY

**"Acute Craniocerebral Injuries."**

This will be the subject of the lecture by Dr. Alton Ochsner, Professor of Surgery of Tulane University.

**"Fractures Near Major Joints."**

**"Chronic Osteomyelitis."**

These subjects will be discussed by Dr. Philip H. Kreuscher, Clinical Professor of Surgery, Loyola University, Chicago.

**"Goitre."**

This will be the subject to be discussed by Dr. Willard Bartlett, Assistant Professor of Clinical Surgery, Washington University, St. Louis.

**"The Uses of Sodium Amytal in Surgery."**

This will be discussed by Dr. Charles T. Sturgeon, of Los Angeles.

**"Fractures as Seen by the General Practitioner."**

This phase of the subject of surgery will be presented by Dr. Jim Camp, of Pecos, Texas.

**"A Review of the Present Day Surgical Treatment of Diseases of the Chest."** This will be discussed by Dr. Stephen S. Dolley, of Los Angeles.

#### OBSTETRICS AND GYNECOLOGY

These subjects will be presented by Dr. Edward N. Davis, Assistant Professor of Obstetrics and Gynecology, University of Chicago Medical School, who will use motion pictures as illustrations.

#### PEDIATRICS

**"Acute Abdomen in the Child."**

**"The Treatment of Empyema in Children."**

These subjects will be presented by Dr. Joseph Brennemann, of Winnetka, Ill.

#### UROLOGY

**"Pyelectasis (Hydronephrosis) and Ureterectasis; Causes and Treatment."**

This subject will be presented by Dr. William Spitzer, of Denver, Colo.

#### RADIOLOGY

**"The Treatment of Accessible Malignancy."**

This subject will be presented by Dr. James M. Martin, Professor of Radiology, Baylor University, Dallas, Texas, using slides and motion pictures.

## EL PASO, TEXAS

Largest city in the Sunshine Spot of America; gateway to the scenic marvels of Arizona, New Mexico and West Texas; just across the border from Juarez, Mexico, El Paso is recognized as an ideal place to hold conventions.



Aeroplane View of El Paso

Convention visitors are assured of finding something to do or some place to go during their entire stay in El Paso. Many places of historic and scenic interest are to be found in El Paso or within a few hours drive from the city.

Where Spanish colonists once battled the desert and hostile Indians, there now stands a modern metropolitan city of more than 100,000 population. A city of modern office buildings, schools, churches, homes. Once desert land is now covered with the green verdure of well kept lawns. The desert has been pushed back from the Rio Grande's edge by irrigated farm lands..

Each year, the year round mild climate, with which the entire Scenic and Sunny Southwest is favored, attracts more and more tourists and home seekers to El Paso and its surrounding territory.

El Paso has become a manufacturing and wholesale distributing center. With trans-continental railways, highways and airways, it has become, likewise a distributing center for tourists. More and more are its attractions becoming known to the rest of the nation.

Rare, indeed, is the person who visits El Paso who finds his trip complete without a visit to Juarez, with the romantic glamor of its past and present ever before one.

Juarez, the largest city on the Mexican side of the border, has a population of approximately 35,000. There are no restric-

tions on American citizens visiting this foreign city with its old world Spanish atmosphere. Two international bridges that are open until midnight each day connect El Paso and Juarez. Street car and taxi service are available. There is also a sight-seeing bus to take the visitor over both El Paso and Juarez, or if he desires he may drive his own car across, providing he carries no baggage with him.

The cafes and cabarets of Juarez have an international reputation as places in which to wine and dine. The cafe district has been greatly extended during the last few years, due to the great increase in tourist travel to El Paso and Juarez.

The old rubs elbows with the new in this border town. Ancient adobe buildings are found side by side with buildings of modern construction.

Among the most interesting places that the tourist visits in Juarez, is Mission Nuestra Senora de Guadalupe, built, by Spanish priests in 1659. This mission is still in use. Near it is the jail and the city government buildings. The City market house is another place of great interest to visitors. Here one finds curios of all kinds, Mexican pottery, food stuffs, laces and handworked cloths of many kinds.

The Juarez Bull Ring is used at regular intervals to stage bull fights, the ancient



View in One of El Paso's Parks

sport of Spain. Thousands of tourists visit Juarez each year to see these bull fights.

In El Paso there are five uptown motion picture houses, all with talking picture equipment. One of these, which has just been completed, is one of the finest theaters in the southwest. El Paso also boasts of an excellent stock company that is now playing its second season in El Paso.



Two splendid golf courses are available for golfers. One is the 27-hole municipal course and the other, the 18-hole course at the El Paso Country Club.

Fort Bliss, the largest cavalry post in the United States, is located at El Paso. Monthly horse shows are held at the Fort. Once a year, a big horse show and polo tournament is staged. Under the auspices of the El Paso-Fort Bliss Polo-Horse Show association, El Pasoans who become members of the association are given riding instruction. Both civilians and members of the service take part in the horse shows.

Many interesting side trips may be taken out of El Paso. To the east is the Carlsbad Cavern National Park. In this area is the largest underground cavern known to men. The caves are the most beautiful of any yet discovered. The government has lighted the trails with electricity and guides take visitors through the seven miles of caverns that have been opened to the public.

North from El Paso is the Ruidoso country, the Mescalero Apache Indian Reservation and Cloudcroft, all in the pine clad mountains. The Ruidoso and Cloudcroft are summer resort sections and popular with El Pasoans.

Below Cloudcroft on the desert a few miles west of Alamogordo, N. Mex., are the White Gypsum Sands, covering 270 square miles in great snow white dunes. Good highways lead to all these places.

The convention visitor who has the time to make some of these side trips after the convention has ended will find them well worth his time. Complete information on what to see and where to go in El Paso and Juarez can be obtained at the tourist information bureau at the El Paso Chamber of Commerce.

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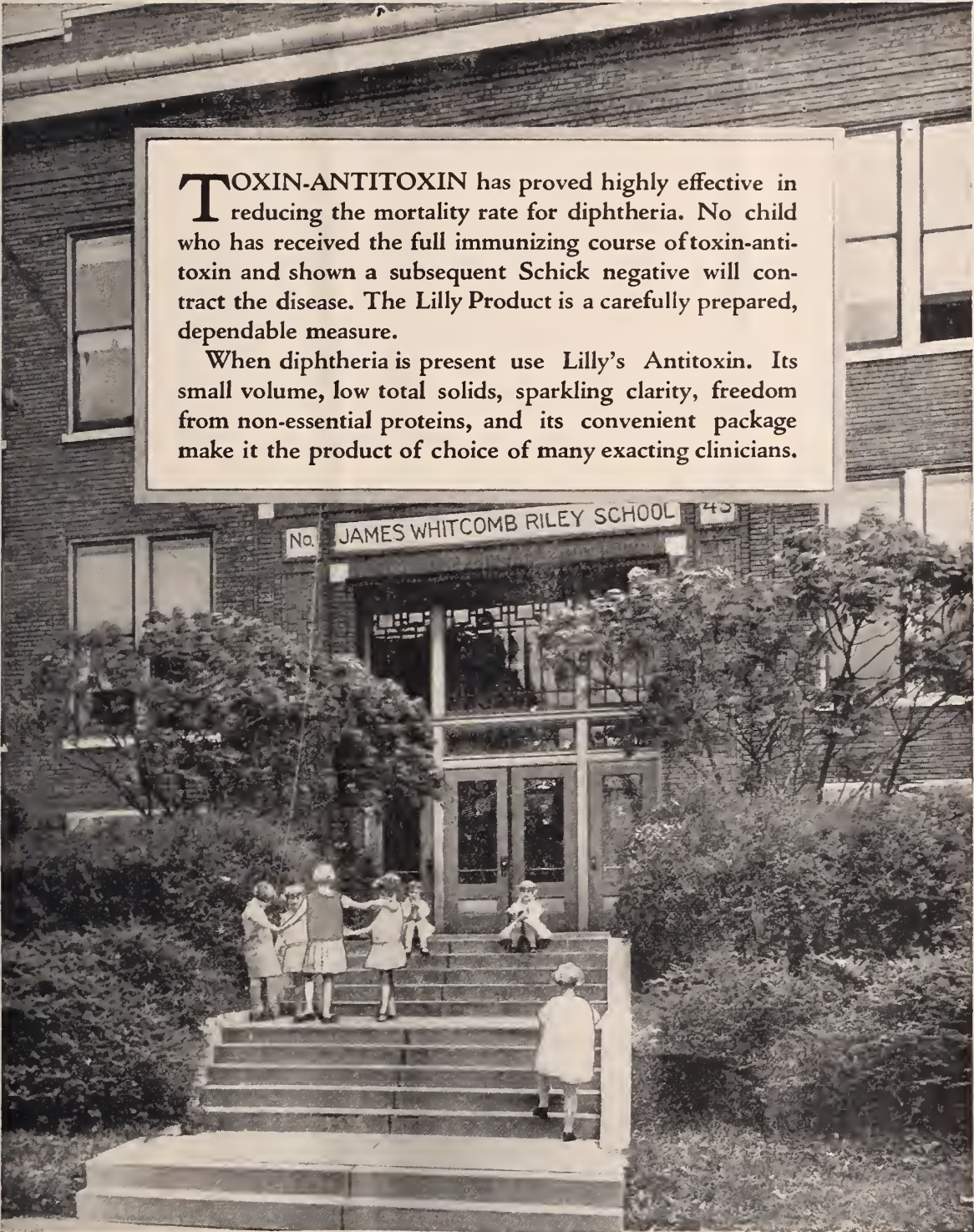
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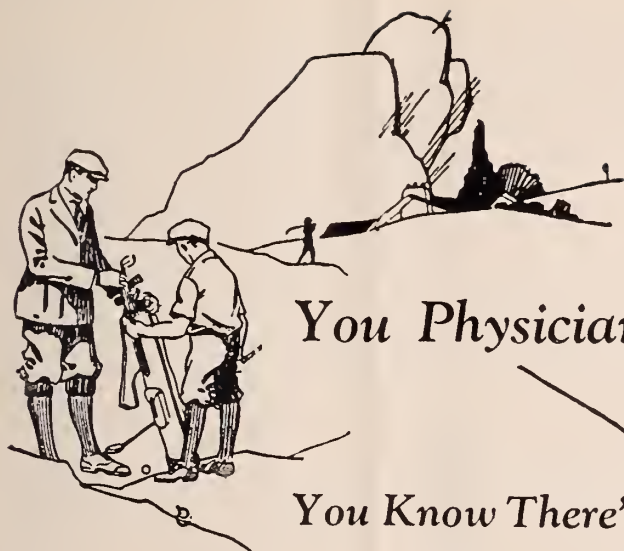
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W. Adams, Charcas, S. L. P., Mexico

## THE NEW MEXICO MEDICAL SOCIETY

(Continued from page 441)

termed it. prepared by Drs. W. L. and C. P. Brown. This consisted of practical points in:

A.—Exophthalmic Goitre—in which he advised that iodine should be reserved—first for the control not cure, of symptoms is exophthalmic goitre; second, that there is no harm in giving it to the already toxic adenoma, as occasionally there are mixed types and some benefit may be derived; third, it is often of value in the adolescent or endemic goitre below the age of 16 to 18 years. We are of the opinion that too small doses of iodine are given ordinarily; it will require ten minims of Lugol's solution three times a day to hold the symptoms in check, and during a crisis or for intensive preparation fifty to a hundred minims a day.

B.—Treatment of Serious Postoperative Abdominal Conditions—setting forth the benefits derived from the use of the duodenal tube for postoperative vomiting and distention.


C.—Osteo-Arthritis—in which reference was particularly made to "creaking knees," characterized by a moderate degree of soreness, giving away, temporary locking, swelling and pain after exercise, which symptoms usually are of long standing though they may occur in young athletes who have had injury to their knees. A great many of these cases are benefited and able to carry on a very normal existence even after the articular cartilages have been nearly destroyed by removal of the vegetations in the knee joint and loose or unloose bodies. This can only be accomplished by very liberal exposure of the entire knee joint, which is admirably accomplished by the incision of Fisher, which begins above and over the center the quadriceps tendon, three to four inches above the patella, comes down until the upper border of the patella is reached, then around to the inner side and back to the center of the patellar tendon, and on to the attachment of the tendon to the tibia.

D.—Compression Fractures of the Vertebra—asserting that these may be caused by trivial accidents and often in the beginning have comparatively trivial symptoms. However, if they are not recognized, the disability progresses for months and months. As they are produced by hyperflexion of the spine, heavy objects falling on the head or by stiff-legged falls, a carefully taken history of the accident will often suggest an x-ray of the spine. Many of the cases go from the third to the sixth week, when it is found that the symptoms are gradually worse, at which time an x-ray is taken and a compression fracture is found. It should be absolutely routine in any spinal picture for trauma or otherwise that a two way picture be taken. After the fracture is diagnosed the patient should treat on his back on a convex bed for at least three months, and wear a well fitted weight supporting and hyperextension brace for a least a year. Cancellous bone does not heal and calcify as quickly as the harder bones, hence the deformity is inclined to increase under the body weight. Not only is

the body weight taken off of the fracture, but extension is accomplished by simply putting comforts and blankets under the center part of the mattress.

In conclusion, Dr. Brown showed slides of six cases which he reported in 1925 under the title of "The Unrecognized Compression Fracture of the Vertebra," as illustrative of the late recognition these cases were getting at that time.

Dr. F. G. Cornish, Jr., Albuquerque, recalled the case of a man with complete ankylosis of the spine due to arthritis, stating that the man was struck on the back by a rock, and when brought to the hospital there were only a few abdominal pains and no other symptoms. These pains left within 24 hours and x-ray pictures at that time showed an old ankylosis of the spine; that a fracture of the body



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of the first lumbar vertebra had been missed, due to the fact no doubt that there were so many arthritic changes. That was in December; in May he was able to get around and about. He claimed he had paralysis of the bowels, which was chronic constipation. Our x-ray pictures at that time showed gradually increasing atrophy in the body of that vertebra, in spite of the complete ankylosis of the spine. This was quite a lesson to be extremely careful in the interpretation of x-ray pictures.

Dr. R. H. Finney, Pueblo, Colo., advised that he had seen the results of five cases of exophthalmic goitre operated under sodium amytal with very gratifying results, 15 grains given intravenously previous to operation, the patient sleeping from 12 to 24 hours after operation, with little excitement and apparently good results.

Dr. Brown in closing stated that the time has come when the orthoedic man has entered into the field of fracture; that general practitioners hesitate to tell a man he will have to stay in bed three or four or five months, which is often necessary and should be done. In regard to the use of sodium amytal, in exophthalmic goitre, I remember that in many cases where it was used, it was often very difficult to get up the mucus. That was our experience with a case at Taos last year, during the annual meeting. Right following that experience I went over to the AMA meeting and at one of the hospitals in Seattle they invited me to see a case operated on with amytal and they had the same difficulty there. I felt that it was too bad to go through that experiment again.

Dr. W. T. H. Baker, Pueblo Clinic, Pueblo, Colo., in presenting a paper on "Tumors of the Female Breast," stated that as yet no one has ever known why tumors of any sort start in the human body

or why they start in some particular spot. We accept as being the dictum that new growths never start in sound tissues. We know that chronic irritations are factors, but this does not explain why in certain cases in which the source of irritation is very slight, new growths develop, while in others where the irritation is much more, they do not. The susceptibility of the individual here enters as being a most prominent factor. In no other way may we account for the fact that 90 per cent of the human race at present do not have cancer and that 10 per cent die from it. In making an examination, the patient is placed flat upon her back with both hands under her head. Her chest should be absolutely bare. She should not be asked which breast is affected. The breast tissue must not be picked up, but palpated by the soft pads on the ends of the fingers with which both breasts should be gently rolled over the underlying thorax. Any swelling, nodule, or irregularity which is discoverable clinically will be at once felt. The object of this examination is to discover whether both breasts contain nodules, swellings or irregularities, whether the breast of which the patient complains be the only one affected, or whether there is more than one lesion. Having discovered swellings or irregularities in both breasts or only in one, the next point to be decided is, can the skin covering the abnormal part be demonstrated to retract, which sign is best elicited by gradually and gently pushing the breast toward that part of the skin to be tested. If present, the slightest retraction of the skin covering the suspected area of swelling can be noted. Retraction of the skin induced by this precaution is one of the earliest and most constant of the classical and clinical signs of cancer.

Dr. Baker gave as his conclusions:

1. All practitioners of medicine should stress



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the importance of stated regular physical examinations.

2. In early diagnosis rests the secret of operative success in cancer of the breast.

3. The proportion of benign tumors of the female breast is greater than is generally quoted.

4. Removal of the breast with thorough cleaning out of all glands is often, but not always, justifiable in advanced cases.

5. Eventually a cancer cure will be found.

Dr. J. R. Van Atta, Albuquerque, in opening the discussion stated that it occurred to him the family history in these cases might be of importance. He recalled the case of a woman who came to him with an extremely bad cancer history, all of her sisters and aunts on her mother's side of the family having had cancer. "Her right breast was removed by an operation, but just exactly one hundred days from the first operation she returned complaining of pains in the opposite breast which was removed and proved carcinomatous. I felt chagrined that I had not elicited some evidence of the involvement of the other breast, since only one hundred days lapsed between the two operations. She came to me the first moment she discovered the nodule. She knew the value of early diagnosis. To me this was a case of apparently hereditary taint, so I consider the history is very important in these cases and believe a well taken history is as important as the physical examination."

Dr. R. O. Brown, Santa Fe, said that the case cited recalled Maude Slye's work in white mice, and it is a valuable lesson for every physician in the country to investigate the family history for cancer, especially when there is any suspicion of cancer in the breast, as beyond question there is a strong hereditary influence.

In closing the discussion Dr. Baker urged that careful histories be taken, as this was a matter of utmost importance, especially since there is something in heredity.

The last number of the Scientific Session was a discourse by Dr. P. G. Cornish, Jr., Albuquerque, N. M., on "Intra-Pleural Pneumolysis" (with lantern slides) and "The Relation of Absorbable Sutures to Wound Healing."

Many compliments were paid Dr. Cornish on the excellence of the results shown in his series of cases, Dr. W. L. Brown, El Paso, stating that it is such a highly specialized technic that we ought to try as far as possible to refer these cases to one man instead of indiscriminately here and there, so that they can receive the benefits of an expert along these lines.

#### GENERAL SESSION

A meeting of the general session was held directly after the close of the Scientific Session, President Brown (Santa Fe), presiding. After call to order, the secretary's report, including a resume of the proceedings of the House of Delegates (which has been published in full in the minutes of the meeting), was read and adopted.

The Committee on Necrology submitted report as follows:

"RESOLVED, That the New Mexico Medical Society notes with regret the passing from this life of the following: Dr. F. E. Bird, Albuquerque and Dr. Miguel F. Des Marais of Las Vegas, the Secretary of this society is directed to convey to the members of the families of the deceased, our heartfelt sympathy and an assurance of respect in which their memory is held."

Report of the Committee on Resolutions was presented as follows:

"RESOLVED, That the New Mexico Medical Society in Forty-eighth Annual Session at Raton, N. M., June 4, 5, 6, 1930, extends sincere thanks for

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the hospitalities extended and courtesies shown its members and visitors by the Colfax County Medical Society, the City of Raton, El Raton Theatre, and the Swatiska Hotel."

Motion that the reports of the committees be adopted was made, seconded and unanimously carried.

President Brown, in closing the session, thanked the members of the Society for their attendance at the sessions, the interest taken and aid rendered him.

Adjournment sine die 1:30 p. m.

### ABSTRACTS

**Treatment of Acute Head Injuries.** Antonio D. Young, M. D., F.A.C.P., Oklahoma City, Okla. Jour. of the Okla. State Med. Assn., June, 1930, p. 184.

The treatment of head injuries causes more anxiety than almost any other emergency of practice. Upon admission to the hospital, if shock is present, this is to be treated first. Immediate surgical treatment is usually necessary only for superficial hemorrhage or scalp laceration; all further surgery can wait until recovery from shock, when a more accurate diagnosis of the case can be made.

When the patient's condition warrants, x-rays of the skull should be made and a sufficient number of films to give details of the nature and site of the fractures, if any be present. Rarely has a patient ever died of a fractured skull; he dies because of hemorrhage, brain destruction or intracranial pressure. Every minute saved in beginning treat-

ment of a severe case of head injury increases the chances of survival. Too often, valuable time is lost in waiting for unnecessary roentgenograms, while the patient's shock and intracranial pressure go unattended. The patient will survive or succumb independent of fractured skull, so early x-ray pictures are not necessary. Following recovery from shock the next essential step is to make the x-ray examination completely and thoroughly.

**Radiation Treatment of Uterine Fibroids and Other Non-Malignant Uterine Hemorrhage.** J. Donald MacRae, Jr., M.D., Asheville, N. C. Sou. Med. & Surg., June, 1930, p. 413.

These cases come first to the general practitioner, the surgeon or the gynecologist. The radiologist sees them only when they are referred to him; it is his duty, therefore, to inform his fellow practitioners about the type of cases he can help and what results are to be expected.

Uterine fibroids and non-malignant uterine hemorrhage from other causes are amenable to radiation therapy, when properly selected, in a very large percentage of cases. The necessity for accurate diagnosis before beginning treatment is emphasized. A diagnostic curettage should be done in all women over 40. The injection of lipiodol into the uterine cavity is a useful procedure in diagnosis. The chief indication for irradiation is uterine hemorrhage. There is need for balanced judgment as to the benefit offered by radiology or surgery. High voltage x-ray and radium have prac-

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tically the same effect on the tissues, and the reasons for choosing one or the other are based chiefly on the convenience of delivering the one or the other at the site of pathology or the organ to be treated.

**X-ray and Radium Treatment in Cancer of the Cervix.** W. M. Sheridan, A. B., M. D., Spartanburg, N. C. *Sou. Med. & Surg.*, June, 1930, p. 411

In determining whether a woman has cancer of the cervix or not, bimanual examination, visual inspection of the cervix and biopsy should all be employed

Cancer confined to the cervix may be eradicated by x-rays and radium or by the Wertheim operation. Panhysterectomy should not be performed and when the disease has spread beyond the cervix the Wertheim is of no value.

Technic advised is to give deep x-ray therapy over lower abdomen and back, each side and perineum, at 200 k. v., .5 mm. copper filter 50 cm. distance, five ma.-hours over each area except perineum which receives half of this dose. After two weeks time any cauliflower mass which has not disappeared is destroyed by electrosurgery; radium is then applied by imbedding in the cervix and by application within the cervical and uterine cavities.

**Lydin Not Acceptable for N. N. R.**—The Council on Pharmacy and Chemistry reports that "Lydin," a product of the Harrower Laboratory Inc., is claimed to be "a physiological sex-stimulant of note," consisting of a combination of "the male sex hormone" with "the antisterility fat-soluble vitamin-E." It is marketed in capsules for oral administration and is recommended for use in the treatment of impotence with the suggestion that "the indications are too well known to be enumerated." The Council publishes a report on the biologic assay of "Lydin" by T. F. Gallagher sent to the Council by F. C. Koch, head of the Department of Physiological Chemistry and Pharmacology of the University of Chicago. This study shows that when administered by mouth "Lydin" is without effect as measured on capons by the comb growth method or on guinea-pigs as measured by the spermatozoa motility test. Brown-Sequard was convinced that an extract of the testes promoted the vitality, but his experiments were not confirmed or accepted. In the meantime, the available knowledge of the glands of internal secretion has aroused commercial promoters to the exploitation of all sorts of glandular extracts and combinations without an iota of evidence to show that any preparation of extracts of the testes, singly or in combination, has ever been shown to have the slight-

est effect on the human body when given by mouth. (*Jour. A. M. A.*, July 19, 1930, p. 201.)

**Testicular Grafting.**—At the International Physiological Congress in Boston last summer, Voronoff boldly reported in relation to his widely proclaimed testicular grafting that the phenomenal results of the transplantation are now definitely established. Recently, Moore has discussed the astounding claims that are prevalent in this field and remarks that the absence of dependable indexes for the alleged "hypogonadism" in man, or the inability to utilize proved indicators for hormone introduction by any means, appears to have caused but little concern to clinicians employing these supposedly remedial measures. Astonishing as it may be, published statements of the effect of hormone introduction, or alleged hormone increases from the in-

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tact organs, claim improvements for conditions that fairly well exhaust the ills to which man has fallen heir. Moore concludes that there is no known acceptable evidence that non-viable testes grafts, that is, grafts that fail to become incorporated within the body and actively secrete, exert any immediate or remote beneficial effect on the host organism. (Jour. A. M. A., July 19, 1930, p. 203.)

**The Vreelands Quackery.** — Clayt Vreeland of Cleveland, Ohio, has for some years been defrauding the baldheaded. He did business under such trade names as "The Vreelands, Inc.," "The Vreelands," and "Vreeland." Finally the postal authorities got around to Mr. Vreeland and on June 24, 1930, the Postmaster General issued a fraud order debarring from the United States mails The Vreelands, Inc., The Vreeland, Vreeland, and their officers and agents. The business was the rather simple one of selling a preparation for the alleged growing of hair. The stuff was called "Hairerbs." It was found to be composed of glycerin and water with a trace of sage oil. (Jour. A. M. A., July 19, 1930 (p. 219.)

### BOOK REVIEWS

**Surgical Diseases of the Thyroid Gland**, by E. M. Eberts, M. D., surgeon to the Montreal general hospital; associate Professor of Surgery, McGill University, with the Assistance of R. R. Fitzgerald, M. D. and Philip G. Silver, M. D., illustrated with 48 engravings; Lea & Febiger, Philadelphia, 1929.

Clinical work can be made just as positively research as can laboratory work. The stage is set for one in clinical work and he must rightly recognize all the features of the setting. In laboratory

experiment one arranges his own setting. Clinical research would then seem to be the more difficult and probably also the more important because it is made upon the human subject.

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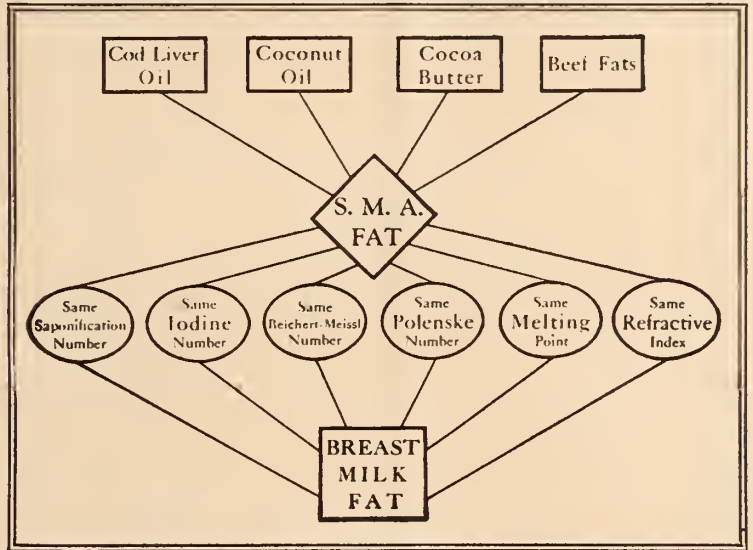
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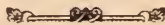
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# Southwestern Medicine

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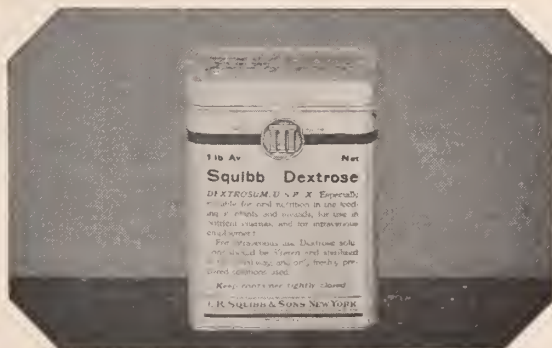


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## HYDATIDIFORM MOLE

### A Plea for the More Careful Study of Tissue from Abortuses

#### Report of Three Cases

C. E. YOUNT, M. D., F. A. C. S.  
Prescott, Arizona

(Read before the thirty-ninth session of the Arizona State Medical Association, held in Phoenix, Arizona, April 24 to 26, 1930).

"To read the titles of articles on 'molar' pregnancies which have appeared during the last few decades, even, is a rather wearisome task. By far the great majority of the articles concern themselves merely with the report of 'a case' or (rarely) of 'several cases' of hydatidiform moles. The recent cancer literature stands in marked contrast to this, for not even the general practitioner would think of reporting a routine case of cancer of the breast, let us say. The significance of these fact is self-evident, and whatever else they may mean they do imply that hydatiform mole still is regarded as a rare condition. Indeed many of those reporting 'a case' frankly say so, and although the incidence of hydatiform degeneration is estimated variously by different authors and investigators, there seems to be entire agreement that it is a rare, even if not an extremely rare, condition. This opinion seems to be shared even by those general practitioners whose long practice runs high up into the hundreds or even into the thousands of obstetrical cases. Indeed, many general practitioners declare that they have not seen a single case of hydatiform mole during the practice of a long life." (Meyer).

Had I been familiar with the above paragraph quoted from the classic contribution of Arthur William Meyer, published by the Carnegie Institute of Washington. I never would have had the temerity to add this paper to an all too prolific literature. While I stand indicted on every count in the introductory paragraph, I am too deeply committed to retract, having already presented the subject to the Yavapai County Medical Society and having had it accepted for this meeting.

I now offer the following reasons for call-

ing your attention to the subject of hydatidiform mole:

1. It introduces a pathologic entity which has not been discussed before any of the Southwestern Associations in the last thirteen years.

2. Because its history abounds in interesting speculations, discussions, and contradictions as to etiology and pathology.

3. Because the vagaries and contradictions concerning the frequency of its appearance furnish instruction in statistical evaluation.

4. Because, after thirty-three years of "watchful waiting," I witness my first case, to be followed by the recognition of two immature forms within nine weeks.

5. Because I should like to record these cases and review with you some of the factors in the modern treatment of the condition, which are so at variance with the teachings of three decades ago.

6. Because I sincerely desire to create an interest in the study of tissue from abortuses (spontaneous) by a simple method I shall describe, hoping thereby to find more immature forms of hydatidiform mole and thus increase the value of our statistics and the accuracy of our prognoses.

**Synonyms:** Hydatidiform mole is known also as vesicular mole, myxoma chorii, cystic degeneration of the chorion, grape mole and chorioma benignum.

**Definition:** Hydatidiform mole is a disease associated with pregnancy, in which the chorionic villi are deformed in structure. The placenta fails to form a compact mass, its villi branching loosely in clusters. The stalk, or stoma, of the villus becomes edematous and distorted, and in the majority of cases the covering layer (the Langhans cells and syncytium) proliferates unduly.



The name hydatidiform originated because of the close resemblance to echinococcus cysts (Brenser 1819). R. R. Frank, S. H. Geist, Dean Lewis' Surgery.

**Historical:** A number of writers state that Hippocrates knew of this condition. Kessman states that Hippocrates ascribed the cause to a mucoid degeneration of the villi.

Apparently there is a lapse of nearly ten centuries before the subject is again definitely presented in the literature. Aetius of Amada, writing early in the sixth century, clearly described it. Again a lapse of about ten centuries. Vega in 1564 and Valleriola in 1573 reported typical cases. Doubtless due to the uncanny appearance and prolific numbers of these "cystic ova" and the mystery which then shrouded their origin, the literature became large and difference of opinion rife.

Valleriola believed the disease due to the abnormal development of the "female semen." Reonier de Graf (1678) thought that each vesicle was an unfecundated ovum. We have definite proof that prior to 1223 the opinion prevailed that each cyst was a living embryo, and thereby hangs a tale, a bit of medical lore concerning "Black Meg," handed down to us through the writings of the great surgeon Ambrose Pare and Samuel Pepys, to whom nothing was sacred, not even his thoughts, as his diary recounts. Pare details the case of the Countess Margaret of Flanders, "Black Margaret," daughter of Baldwin, Emperor of Constantinople, who brought forth at one birth 365 infants, of whom 162 were solemnly baptized "John," 182 "Elizabeth" and the odd one, after much ecclesiastical debate, was adjudged an hermaphrodite and accordingly buried without baptism. Pepys in his journey to the Hague in 1660, speaks of going by wagon to Lansdune, where the 365 children were born: "We saw the hill where they saw the house stood and sunk, wherein the children were born, the basins wherein the male and female children were baptized do stand over a large table that hangs upon a wall, with the whole story in Dutch and Latin, beginning Margaret Herman Comitissa."

Countess Margaret was granted a divorce from her first husband, Bosschaert (Buchard), Lord of Avennes, on several grounds, one of which was "too near relationship between the parties." My historic link is broken at this point but, assuming Bosschaert responsible for the pregnancy resulting in this mole of 365 children, we can readily understand from the beliefs prevalent at the time why the grounds for divorcement were sufficient.

Paul Postal (1685) presented in his work a good picture of the condition, with a fairly accurate description. Ruysch in 1691 declared that the cysts were due to some disease or alteration of the ovum. In the early part of the nineteenth century Madame Boivin, a French midwife, published several papers on obstetric subjects. She is credited by one author as considering the disease due to echinococci, by another as recognizing the chorionic origin of the mass. Velpau (1827) called the cysts degenerative villi, as we know them today. Meckel (1847) suggested the hydroids due to vascular destruction. Virchow (1853) called it a mucoid myxomatous degeneration, a view generally accepted until 1875 when it was disproven by the masterly study of Marchand.

With the first report of chorion epithelioma by Sanger in 1889 and the rapidly confirmed observation that more than one-half of such cases were preceded by the expulsion of a hydatid mole, great interest was created in the pathology of the two conditions, especially the question as to whether mole was an essential precursor to the development of chorion epithelioma. In 1922 Emil Novak stated that no group of neoplasms is more interesting than that represented by hydatidiform mole and chorion epithelioma. Furthermore, DeLee states these malignant syncytiomata may develop in the uterus, in the cervix, or in the vagina (local metastases), or, if the vesicles and masses of syncytium are carried by the blood stream to distant organs, a general syncytiomatosis may ensue, but usually the lungs are first and most involved.

**Frequency:** Statistics on the frequency of hydatidiform mole exhibit such wide variations that we welcome any plausible explanation. It seems reasonable, as pointed out by Schumann, that many cases of this affection occur in the hands of practitioners outside of hospitals and are never reported, that a true evaluation of their frequency is not possible. Another noteworthy observation by Meyer is that "mole formation is a rare disease at or near term, but it probably is the commonest of all diseases of the ovum during the earliest months of gestation. The typical large hydatidiform mole is an end result which has taken many months to develop." My own observation from a study of the literature is that there will always be, and justly so, a wide margin between statistical evaluations of the surgeon based on macroscopic appearance, and those of the pathologist based on microscopic study. Having oriented ourselves upon the cause of these variations in the statistical incidence, the following estimates become the

more interesting. Essen-Møller gives the incidence as three per thousand, while Madam Boivin considered it far more rare, occurring only once in 20,000 cases. Williamson gives an incidence of one in 2,400 cases. Pazzi is quoted as having stated that he had never, in an experience of more than 6,000 cases, encountered a case of hydatidiform mole. Edgar stated, "I have seen it (hydatidiform mole) four times in 15,000 cases of labor observed in hospital and in private practice."

Meyer calls attention to the overlooked investigations of Gierse, in 1847, who found that the characteristic changes of hydatidiform disease are found in many abortions and, indeed, constitute a most common cause of abortion in the early months. Gierse believes that hydatidiform degeneration is an extremely common condition in spite of the rarity of the fullblown form of the disease, to which authors have usually confined their attention. Storch, in 1878, likewise emphasized the frequency of hydatidiform disease in early pregnancy. Meyer urges that the cases of hydatidiform degeneration reported in the literature are merely end results of a process which, in its early stages, is a common cause of early fetal death. He estimates the incidence of these earlier forms of the disease among the fetuses in the Mall collection, including some of the specimens classed as normal, as 10.9 per cent among the uterine specimens and 20.8 per cent among the tubal. He estimates, tentatively, that as many as from four to ten per cent of all conceptions end in hydatidiform degeneration. These figures are rather startling, for they indicate an incidence fully 240 times as great as that given by Williamson, and 33.3 times as great as that given by Essen-Møller (Novak).

According to Findly, molar pregnancies occur once in 3,000 normal gestations. Schumann, summarizing his discussion, states "that for practical purposes the incidence of one (hydatidiform mole) in about 2,000 pregnancies seems to portray the average frequency. Kaufmann, quoting Seitz, states that hydatidiform mole occurs once in 500 cases of childbirth.

In relation to abortuses, O. A. Gordon, Jr., makes the following observation from the Bellevue Hospital records: "Out of approximately 4,500 abortions we have discovered twenty-one hydatidiform moles, or 0.4 per cent. I say we have discovered twenty-one cases, for I feel sure many early cases have been overlooked."

Hydatidiform mole is more frequent in multipara and during the middle of the childbearing period. From Findly's table we note

that between fifteen and twenty-five years there were 111 cases; between twenty-five and thirty-five years of age, 143; between thirty-five and forty-five years of age, eighty-four; and between forty-five and fifty years of age, thirty-six cases. These figures probably do not bear a normal ratio to the total pregnancies for these years, certainly their frequency after twenty-five is the more remarkable when we consider the small number of births at this period.

Ectopic gestation may undergo this form of degeneration but hydatidiform mole of the tube may be considered rare. Novak states "that in a number of tubal specimens which I have recently examined, however, there seems to be no question as to the character of the villous changes." In view of this statement the figures from the Mall collection of 20.8 per cent of mole in tubal pregnancy does not seem absurd, but rather suggests that the surgeon is not submitting his specimens of chorionic tissue to the careful pathological study they deserve.

Retention of molar pregnancy in the same individual is rather rare. 1.4 per cent, using Findly's figures. Essen-Møller reported the case of a woman who expelled spontaneously eighteen moles in the course of nine years. I record in this report the detailed history of a case (Case 3) who had four moles in twelve pregnancies.

**Appearance and Size:** We should remember that the appearance and size varies, with the period of development, from a few tiny vesicles in an aborted ovum to the fully developed cysts seen in later months.

DeLee states that hydatidiform mole (mature) can not be mistaken. It resembles a bunch of catwba grapes of most irregular size, varying from that of a pin-head to that of a hen's egg (rare), but usually the size of a pea or bean. Years ago Playfair stated that, on minute examination, they are found not to be each attached to independent pedicles, as is the case in a bunch of grapes, but some of them grow from other vesicles, while others have distinct pedicles attached to the chorion. The pedicles themselves sometimes are distended with fluid.

A study of my own fully developed case shows each cyst attached, (1) by a delicate, sometimes threadlike pedicle to each other, (2) to parent cysts evincing a process of budding not unlike that observed in yeast, and (3) to dense areas of decidua.

A well developed mole weighs from 300 to 600 grams, a weight of 8000 grams has been recorded (Menu). Lusk relates his experience with one which filled an ordinary wooden bucket. In this case there had been se-



vere hemorrhage, the patient dying two hours after delivery from anemia and shock.

**Etiology:** The etiology is uncertain and much in dispute (Kaufmann). Frequent association with nephritis has been noted and Durante believes that maternal toxins are a cause. Syphilis, heart disease, general affections, and disease of the ovum and spermatozoon have all had their advocates, but they are practically ruled out today as having no demonstrable foundation. According to Meyer, "of the many explanations which have been offered for the advent of hydatidiform degeneration, none seems to be better established than that of endometritis."

After reading a great number of theories and opinions, we quote Schumann: "It is sufficient to say that with our present knowledge of the subject, the etiology of mole formation is not known, but the evidence seems to point to . . . changes taking place in the embryonal envelope rather than in the embryo itself."

**Hydatidiform Degeneration in Other Mammals:** I had hoped to approach the etiology of hydatidiform mole through the study of comparative anatomy and pathology. So far the results have been disappointing. DeLee states that Aichel had exposed the uteri of pregnant dogs, injured the placental site by pressure and observed the formation of hydatidiform mole in seven to thirteen experiments. Professor Meyer, commenting on this experimental "evidence," states: "Although a condition closely simulating hydatidiform degeneration may be produced experimentally by pressure, I doubt that pressure is the cause. There are so many facts which would seem to be irreconcilable with such a hypothesis."

From the library of the Surgeon General I secured abstracts of two references kindly furnished by Dr. Bucklev, Chief Pathological Division, Bureau of Animal Husbandry, Department of Agriculture, Washington. C. Williams of Ithica, New York, has reported cases but his observations are questioned by Joest (Berlin) thus: "The formations described by Williams do not correspond actually to what is termed hydatid mole, according to accepted definition. The hypertrophy of the villi is absent. The formation is nothing else but an ovum, the embryo of which has perished, and the membranes of which have continued to grow. The hypertrophy and edematous or myxomatous degeneration of the villi are especially absent."

Frei (published by Joest) describes a case from a cow, with photograph showing numerous cluster-like and cystic formations

ranging in size from a pea to a child's head. Grossly this might be chorionic degeneration but the histologic and pathologic data are hardly sufficient to classify it as of the same type of chorionic cystic degeneration observed in the human. Frei gives a bibliography which I will append in its proper place.

Lacking full histologic and pathologic confirmation I will quote Professor Meyer as representing the best present American views on this point: "At the time I was engaged in my investigations on these matters, I wrote to the foremost veterinarians in colleges connected with universities, but did not succeed in learning of a single authentic case of hydatidiform degeneration in other mammals. One or two men wrote saying that they had heard of it, but reference to the literature always left me without confirmatory evidence. We have never observed it in the many thousands of laboratory animals—rabbits, guinea-pigs, rats, mice—which we have used during my presence here at Stanford."

**Pathology** To promote clarity in considering the pathology of mole, we will pause to review briefly the histology of the epithelium of the normal villi. There are two layers; the lower, Langhan's, is made up of clear cuboidal cells, undoubtedly of fetal origin, trophoblastic. An outer protoplasmic layer or syncytium is rich in darkly staining nuclei, containing fat granules and a striated border. There are two opinions as to its origin: one, that it is maternal, representing changed uterine epithelium; second, it is of fetal origin. The majority of workers believe both layers arise from the primary ectoderm, the trophoblast of the germinal vesicle. (Kaufman).

The three pathologic changes which characterize hydatidiform mole are trophoblastic proliferation, hydropic degeneration of the stroma and degeneration of the blood vessels (Novak). Furthermore, it should be remembered that different pictures are likely to be encountered in different parts of the mole and that trophoblastic proliferation may be striking in one area and absent elsewhere. These peculiarities are perhaps chiefly due to the environmental conditions surrounding the villi, depending upon whether the villus has separated from the uterine wall or whether it still receives abundant nutrition from the maternal tissues. (Novak.)

Each individual cyst is a swollen and edematous chorionic villus, its entire covering being the ectoderm as more or less proliferated Langhan's cells, exuberant and irregular buds of syncytium, and a delicate stem. (Schumann.)

The hydropic and partially mucoid changes beginning in the center of the stoma and leading to bubble-like blowing up of villi are not the most important part of the disease; the changes begin rather in the epithelium of the villi where there is a vigorous more or less lawless overgrowth with mitoses, chiefly on the part of Langhan's cell layers. (Marchand-Frankel.)

The mole process may involve the entire chorion, since originally this contains villi over all of its surface, and then no placenta can be recognized, or the process may involve the placenta alone, or only isolated cotyledons. The last is quite common in abortion and is important in considering chorion epithelioma. If those changes take place in the first two months of pregnancy, the entire ovum is changed into a mole, and there can be found no amniotic sac, no fetus and no placenta (sterile mole). (Kaufmann.)

**Relation to chorio-epithelioma:** When the fact became known (Sanger 1889) that the disease (hydatidiform mole) might be either benign or malignant, every effort was made by pathologists to discover some distinguishing histologic mark by which the two forms might be differentiated. These efforts have been unsuccessful. Marchand, Aschoff, Zagorianski, Kissel, v. Franque, Albrecht, Hormann, and others agree that we have absolutely no histologic criterion for determining the malignancy of these tumors. Moreover, a further difficulty in diagnosis exists in the fact that the tumors exactly resemble the normal fetal tissue. Hitschmann and Cristofolletti came to the following conclusion: "As a matter of fact, we are convinced that a histologic difference is entirely improbable. We know of absolutely no morphologic and biologic difference between the physiologic fetal tissue and the pathologic. The more carefully we study the earliest phases of placenta formation and compare them with chorio-epithelioma, the more we feel justified in the statement that between trophoblast (fetal tissue) and chorio-epithelioma there is no difference. (Graves.)

**Diagnosis and Symptomatology:** Hydatidiform mole occurs most frequently in multipara and in the middle of the childbearing period. The diagnosis is often not made until grape-like cysts have been extruded and preserved for the physician's inspection. Failure to literally "drag out" this fact from the patient or nurse in your history taking may result in your failure to make a correct pre-operative diagnosis, as in my first case where two "placental" masses were exhibited but two cysts as large as grapes were neither exhibited nor mentioned until after operation.

Given a history of suppressed menstruation, followed in two or three months by repeated, intermittent or prolonged mild or severe hemorrhage, without known cause, often unaccompanied by uterine pains, and then a careful bimanual examination revealing an enlarged, soft or elastic (not doughy) uterus, somewhat larger than the period of gestation would suggest, should at least arouse suspicion as to the presence of hydatidiform mole. If the cervix is patulous and the cysts of the mole palpated, the diagnosis becomes positive. Extruded cysts are pathognomonic. In later months the disproportionately enlarged uterus, without detection of fetal heart sounds or motion, might raise the question of mole. On the other hand, we would not overlook the fact that a well developed mole and a living fetus have been reported to co-exist in the uterus, but it is extremely rare and is explained either by a twin pregnancy or only a small portion of the placenta involved in mole formation. Another point to be developed in the history at least, is that many of these women are "sick," rundown, toxic or anemic out of all proportion to the hyperemesis or bleeding experienced.

In the bimanual examination we are statistically informed that fifty per cent of the mole cases show the enlarged bilateral lutein cysts of the ovaries. DeLee states that in two of his cases the uterus became smaller, not larger, before the mole was expelled. This fact was noted in two of my cases. In the abortion itself the uterine contractions are usually sluggish but the hemorrhage is often alarming and furious, and death may ensue from acute anemia.

In differential diagnoses we have to consider the ordinary abortion, hydramnios, placenta previa and grape-like sarcoma of the cervix.

**Prognosis:** Fetus: The fetus is usually destroyed early during the mole growth and is seldom found when the mole is discharged.

**Maternal:** This is of importance, first, as to the immediate effect from hemorrhage, sepsis (peritonitis) and rupture of the uterus, these factors being further modified by the age of the mole (immature and full-blown); second, somewhat more remotely, we are concerned with the invasive, malignant type, chorion epithelioma.

Here again statistics are at variance. A primary mortality of ten and fifteen per cent is probably fairly accurate if cases of Class 2 are excluded. In Class 2 (chorion epithelioma) the mortality immediately becomes enormous (fifty per cent—Schumann). We note, "That in a carefully observed series from five to sixteen per cent of hydatidiform moles are followed within



five years by true chorion epithelioma" (Schuetzter, Sunde, Essen-Moller). The danger of chorion epithelioma following the development of hydatidiform mole is increased as the age of the patient advances; in those over forty-five years of age the danger is five times as great as in a younger patient (Frank and Geist).

**Treatment:** We might briefly summarize the treatment of thirty-five years ago as "non-interference so long as the uterus remained passive. When contractions set in the vagina was tamponed and ergot given in full and repeated doses until the mole was expelled, or rapid dilatation of the cervix and manual removal of the mole, after which the uterus was washed out with antiseptic fluids or swabbed out with perchloride of iron."

Today we find treatment sponsored by two schools which we shall call conservative and radical. The practice in each, however, is often modified by the stage of development of the mole and the ravages of hemorrhage and sepsis encountered. Furthermore, from what has been stated concerning pathology and prognosis, these two schools base their differences in treatment very largely upon their evaluations of these two factors.

The conservative school would ordinarily empty the uterus from below. Here adequate dilatation of the cervix is imperative. Furious hemorrhage may be encountered at the first attempt at dilatation and gauze pack may have to be resorted to, resulting at times in a two stage operation. Rigid asepsis is imperative and the work should be done in light anesthesia, but many of these cases are "emergencies" outside of hospitals. If hemorrhage is not too furious, or the patient's depletion too great, cervical dilatation to admit one or two fingers is highly desirable, not only because it permits a more accurate and rapid removal of the mole but because digital exploration of the uterine cavity during and after removal of the mole is necessary to the safety of the patient and your prognosis. In emptying the uterus from below we can not over-emphasize the meticulous care required in digital and instrumental removal of the mole. The tactus eruditus seldom serves a greater need. Perforations are common and hemorrhage often alarming. One or both of these factors may force the conservative operator to pursue the radical course, open the abdomen and perform a hysterectomy even before a much needed transfusion can be done.

The conservative treatment is summarized by O. A. Gordon, Jr., as follows: "Hydatidiform mole should be treated from the stand-

point of hemorrhage and sepsis, bearing in mind only the remote possibility of the development of chorio-epithelioma."

Having explored the uterus carefully with the finger (if possible) and removed all mole tissue by digital curettage supplemented by the use of one of the least traumatizing types of placental forceps, we swab the uterus gently but thoroughly with a gauze wipe carrying half strength tincture of iodine, followed by a dry gauze wipe and then followed by an iodine gauze pack for twenty-four hours. To overcome the uterine inertia, so often noted in these cases, the hypodermic administration of aseptic ergot or small doses of pituitrin is advised.

Schumann advises against the use of the curette and placental forceps whenever possible because of the danger of perforation by this means, and because of the danger of distant metastases, as to the lung, being produced by instrumental removal.

The diagnosis made, the radical school would proceed at once to open the abdomen and do either a supravaginal hysterectomy or cesarian section. If the patient has been adequately compensated for blood lost, by transfusion with salines, with the operation skilfully and rapidly performed under ideal operating conditions, either of these radical procedures has at least two factors to its credit: (1) The hemorrhage is almost immediately controlled in the steps of the hysterectomy or by manual compression of vessels in the cesarian section; (2) there can be no incomplete removal of the mole or possibility of chorion epithelioma later.

If the uterus is opened and the mole removed, it is done in the "open" with the cavity of the uterus under optical and digital inspection. Should the syncytium be observed to have penetrated deeply the uterine wall, hysterectomy can complete the operation. If after removal of the mole, inspection reveals no serious damage to the uterine mucosa, the uterine musculature may be closed as in cesarian section, having first passed a strip of iodoform gauze down through the cervix into the vagina.

That the lutein ovarian cysts so frequently associated with hydatidiform mole can be promptly dealt with in the abdominal operations is hardly a valid argument for the major procedure because as previously noted, many cysts involute after the mole is expelled and cause no further trouble. Extensive radical surgery in these poor risk cases as a routine would certainly add to the immediate mortality. The desirability of leaving the uterus should always receive consideration in selecting the operation. Many mole bearing uteri have subsequently

brought forth living healthy children, as illustrated by two of my cases.

Finally, as noted elsewhere in this discussion, many of these cases occur in the hands of practitioners outside of hospitals. Here the resourcefulness of the physician is taxed to the utmost. He must stop a furious hemorrhage rapidly attaining alarming proportions and, at the same time, prevent sepsis by the use of such emergency material, instruments and appurtenances as are available, attended often by untrained assistants and without anesthetic. These are the situations that frequently add to the mortality statistics.

The severity of the hemorrhage is not always in proportion to the size and age of the mole. Early moles showing only minute degeneration in very young villi may open up large intervillous spaces or uterine sinuses, causing prolonged bleeding, followed by severe hemorrhage until the cause is removed.

Postoperative observation should be had in all cases of hydatidiform mole for several months and a follow-up record for a period of at least five years. Without causing undue apprehension, I believe the patient should be instructed concerning the general factors for health after hydatidiform mole and her intelligent cooperation sought. More particularly is this true as she passes into the hands of other physicians.

**Examination of Tissues from Abortions:** I have found the following simple method of service in the gross study of the aborted products of conception.

In cases of irregular bleeding ("threatened abortions") in the early months of pregnancy, or even where patients are passing "fleshy" tissue with the blood clots, I provide them with a small wide-mouthed specimen bottle containing several ounces of two per cent formaldehyde solution. They are instructed to separate the clots from the "fleshy" particles and send the latter in at the first opportunity. Should the specimen bottle not be large enough they are directed to use a fruit jar or other similar receptacle, to wash the blood clots out gently and put the "fleshy" portions in the jar, covering with enough water to prevent dehydration, which is rapid in this climate.

On receiving the specimen I "rinse" it every two or three hours in two per cent formaldehyde solution for the purpose of removing blood and slightly hardening the delicate structures.

The specimen, or portion of it, is now transferred to a small wide-mouthed flat (not round) bottle or specimen jar containing two per cent formaldehyde solution and

the container stoppered. With Leupe glasses or hand magnifying glass, interpose the specimen between the eye and a strong light, gently revolve or agitate the specimen in the clear solution. A very young hydatidiform mole will be easily detected, its syncytial buds floating like kelp (sea weed), which it greatly resembles at this stage. Its recognition when a vilus becomes hydatiform, that is, when liquifaction of the stoma occurs. "This liquifaction appears in more or less restricted portions of the villus, thus giving rise to the long fusiform and later spherical vesicles so characteristic of the hydatiform mole" (Meyer). The typical gross, hydatid or watery, translucent nature of the villi can not be relied upon in early stages, for normally shaped villi, which have undergone considerable lysis may be almost transparent and also somewhat more than normally bulbous. However, save in the case of some specimens of tubal pregnancy, the swelling of the villi, due to maceration or to luetic changes, is quite different in character from that characteristic of hydatiform degeneration, and usually quite easily distinguishable from it."

A further refinement of the gross study may be made by grasping with fine tissue forceps, under direct vision the particular cluster of villi desired and lifting it out of the solution (it will usually sever by its own weight, if not, cut with fine scissors); place in a hanging drop slide, filling the cup with five per cent formaldehyde solution; spread the villi by teasing with a fine needle; make a moat of Canada balsam and apply a cover glass. Examine under very low power of the microscope, four to twenty diameters. A microphotograph can readily be made at this time if desired. Confirmation of the macroscopic findings may be had by histologic study of sections. This is always desirable where macerative changes may confuse the diagnosis.

I opine that such assiduous study to all aborted tissues would eventually substantiate the dictum of A. W. Meyer, et al., to wit: "How many cases of hydatiform degeneration we can find in abortuses in tubal or hysterectomy specimens even, will depend very much upon the care with which the examination is made, for the condition undoubtedly is extremely common and not rare as heretofore supposed."

Preservation of the mole may be made in Keiserling's solution No. 3—modified, or in ten per cent formaldehyde solution.

NOTE My: identification of immature forms in cases 2 and 3 was kindly verified by Professor A. W. Meyer of Stanford University.

#### CASE 1.

Mrs. L. C., age 27, spanish, married 9 years.



Admission diagnosis: Retained secundines. Admitted for removal of retained secundines.

Patient went to see her doctor about middle of October, 1929. Her last menstrual period was June 16, 1929. She had begun to "flow" but had no cramps. Her doctor told her she was between 3 and 4 months pregnant. She had a "cold," cough, vomiting and chills. He prescribed "tonic." Flow continued until Dec. 25, 1929. On Nov. 15, she called to see her physician about it but he was out of town. She saw no other. The flow from middle of October to December 25 was sufficient to require a napkin. Dec. 24, she passed a piece of "fleshy" substance from the vagina with some large blood clots. Dec. 25, passed a large piece of fleshy substance about three inches by one, blanched and foul smelling. I examined it and macroscopically it resembled placenta retained in the uterus for a very long time (macerated). She passed two small cysts on the morning of Dec. 25, but did not tell me until after her operation.

Family history: Father dead, cause unknown. Mother died of septicemia. No brothers or sisters. Husband in good health. Three children, ages 7 and 5 years and 1 year, 10 months, all living and well.

Past health: Measles in infancy, severe attack of influenza in 1918, made good recovery; no other illness. Menses began at 18, every 30 days, regular, painless, 3 to 4 days duration. Last period, June 18, 1929. Three normal pregnancies and deliveries; able to nurse her three babies. Does not know of any disease of uterus, tubes or ovaries.

Present condition: Fair, anemic from slow steady flow lasting from middle of October; some uterine contractions.

No active lesion of nose, throat or mouth; teeth in fair condition. Lung sounds clear throughout, no areas of dullness.

Heart: no valvular lesions; no enlargement of borders, rhythm normal. Abdomen: No enlargement of liver or spleen; some tympanites. Skin shows some blanching, suggesting anemia.

Special examination: The uterus was large, boggy and extended a little over half to umbilicus. The cervix was dilated to about size of one inch and the examining finger could just reach the edge of a retained placenta-like mass. Patient removed to hospital.

Pre-operative findings: As patient was being prepared for the operating room and after her preliminary hypo of morphine, she was seized with a hard uterine contraction and expelled a large hydatidiform mole, followed by profuse hemorrhage. Estimated weight of mole about two pounds.

Ether anesthesia. Cervix patulous uterine cavity had a peculiar feel to right side just above internal os, "gummy," not like ordinary placenta; this forced the finger to left side of fundus, giving sensation of a bicornate uterus, but when mass was broken up the uterine cavity had normal contours. All parts of mole that could be detached were loosened with finger and carefully removed with placental forceps; uterus swabbed with dry gauze; half strength tr. iodine and iodoform gauze pack, light. Aseptic ergot (hypo); gauze removed in 24 hours, no bleeding; uneventful recovery.

Patient advised to report for examination twice monthly; also possibility of hysterectomy explained.

Catheter specimen of urine. Dec. 25, 1929; Reaction neutral; sp. grav., 1.005; alb., 0; sug. 0; epithelial cells, a few; pus cells, occasional.

Blood count Dec. 26, 1929: Red cells, 4,190,000; white, 14,500; hem. 75 per cent; polys, 74; col. index .9. On Dec. 28, 1929: Red cells 3,580,000; hem., 75 per cent; col. index, 1.07.

On January 25, 1930, uterus was involuting nor-

mally and there was no evidence of chorion epithelioma.

## CASE 2

Mrs. "A. G. X.," white female, age 34. Early history not relevant.

Menstruated first at eleven and a half years; irregular all her life but conform most closely to 24 day type. Married at 29.

*First Pregnancy*, Dec., 1926. Abortion. Last menstruation Dec. 26; began to flow profusely Feb. 2nd and continued until 6th, then dark brown discharge; severe cramps night of Feb. 24; opiate for relief; cramps returned with profuse hemorrhage. Feb. 25 dilated and curetted uterine depth 4 inches, cervix patulous, decidua removed which seemed to be disintegrated and broken into small pieces; some "membrane" had been expelled before operation. This was "spontaneous" abortion, a child was greatly desired.

"membrane" had been expelled before operation. This was "spontaneous" abortion, a child was greatly desired.

April 26, 1927, I operated her for chronic appendicitis and aberrant piece of mammary gland in left axilla (cystic degeneration). At that time left ovary contained a cyst about size of a thimble which was evacuated. Right tube normal, right ovary sclerotic. Small subserous fibroid, size of marble, in fundus of uterus removed.

*Second Pregnancy*, June, 1927. Abortion. Became pregnant in June, 1927; normal up to August; after a slight cathartic (cascara) "perfect decidua" passed with very little uterine cramping. (Had been given bromides and opiate to control pain).

In fall of 1927 she had what I diagnosed as membranous dysmenorrhea, passed membrane-like masses with three periods; advised curettage; refused. Used tr. iodine and ten per cent silver nitrate endometrium.

*Third Pregnancy*, March, 1928. Normal child. Pregnancy, March, 1928; baby born Jan. 7, 1929, ten days over calculated time; ROA. Threatened eclampsia, 25 per cent alb.; headache, electric lights before eyes; granular casts and pus in catheterized specimen of urine. All of this having developed in last few days of pregnancy. B. P., 138-78. Forceps delivery, laceration of cervix and perineum.

*Fourth Pregnancy*. Mole. Last menstruation Dec. 13, 1929. Noticed some blood stain Feb. 14, 1930; Feb. 19th, passed "mole," no pain, only dull ache (uterine sedatives had been given to prevent abortion). Sac about size of English walnut, no fetus could be located within it; mole degeneration of chorion detected by method of study outlined in this report. Passed fleshy particles for about one week. Feb. 24th, dilated and curetted. Small piece of mole degenerated decidua removed. Seventeen days later passed other fleshy masses.

NOTE: Sept. 27, 1930. For five months following the February curettage she passed membranous masses like those noted in 1927. She has a severe endometritis with laceration of the cervix and perineum, for which operative correction has been advised. Because she is desirous of another living child, operation has been deferred. She is now three and a half months pregnant.

## CASE 3

Mrs. L. A. W., white female, age 34, born in Indiana. Family history irrelevant.

Only diseases of childhood are mumps and measles; always had good health; only sickness associated with pregnancy and appendicitis, July, 1921. First menstruated at age of 15 years, regular, 28 day type. Married in 1918 at age of 22.

*First Pregnancy*, delivered Nov., 1919. normal. Child weighing ten and a half pounds—no trouble at confinement.

*Second Pregnancy.* Nov. 16, 1919. "Mole." Went to see Dr. Charles C. Wallin, Lewiston, Montana, in April, still nursing first baby. Had dizzy spells, felt badly whole time, nauseated, tired, dragged out. Two months later flowed for 3 weeks; stopped, no flow from April to Nov. Sudden severe hemorrhage. Dr. Wallin states, "Mrs. L. A. W. entered the hospital Nov. 15, 1920, with uterus enlarged due to five months pregnancy. She had moderate continual vaginal bleeding and pain; no fetal heart sounds, no fetal motions and no ballottement. The uterus was heavy and boggy, about one finger dilatation of the cervix. The vagina was packed for 24 hours, at the end of which time, sufficient softening and dilatation had occurred to permit manual dilatation and removal of mole. Convalescence entirely affable."

*Third Pregnancy.* Abortion, Aug. 21, 1921. Report of Dr. C. C. Wallin: "July 22, 1921, she was re-admitted to the hospital with severe attacks of pain in the appendix region: white count, 17,450. This was the third and most severe attack she had had. She was at this time three months pregnant. I removed her appendix and she left the hospital August first. On Aug. 17, 1921, she returned to the hospital with slight bleeding and some lower abdominal pain, temperature 100. On the 21st her temperature went up to 103, pulse 120 and she had a chill. I cleaned her out the next morning and her temperature came down to normal. She left the hospital in good condition on the 25th of August. There were no palpable pelvic abnormalities at the time of the appendectomy."

Later, patient had pelvic repair work done in South Bend, Indiana.

*Fourth Pregnancy.* Mole; May 30, 1922. Report of Dr. Fred F. Attix, Lewiston, Montana: "We delivered a big hydatidiform mole from Mrs. L. A. W. May 30, 1922. As this was not a hospital case, our records are not complete."

Patient thought that she was about four months pregnant and that she had severe hemorrhage several days before mole was expelled. She further stated that Dr. Attix advised hysterectomy.

*Fifth Pregnancy.* Normal; May 26, 1924. Normal pregnancy, small child weighing four and a half pounds. Nothing abnormal.

*Sixth Pregnancy.* Normal; March 26, 1925. Normal child born March 26, 1925, weight seven pounds. Nothing abnormal recorded about pregnancy.

*Seventh Pregnancy.* Normal; June 6, 1926. Normal child delivered June 6, 1926, weighing six and three-fourth pounds. Nothing abnormal recorded.

*Eighth Pregnancy.* Mole; April, 1927. Patient states she was about three months pregnant when she expelled the mole. She flowed for six weeks before she expelled mole,—"packed in ice" several days to check hemorrhage. Recovery prompt; mole exelled in one piece.

*Ninth Pregnancy.* Abortion; Sept., 1927. Three months pregnant; had uterine contractions, cause undetermined. Sac ruptured, expelling fetus; placenta retained, curettement in San Francisco, Cal. This was not a mole.

*Tenth Pregnancy.* Miscarriage; June, 1928. She was six months pregnant, when spontaneous rupture of membranes occurred and labor followed in three days. Macerated fetus. Infection followed, had fever for about one week.

*Eleventh Pregnancy.* Normal; June 14, 1929. Full term pregnancy, delivered of a healthy infant weighing five pounds. For the first three months of this pregnancy she flowed off and on every few days, just enough to soil a pad; there was one heavy flowing spell. Throughout, there was an unfortunate phobia due to her previous experiences with moles. Uterine inertia at the time of delivery

resulted in protracted labor. Conditions of placenta not known.

*Twelfth Pregnancy.* Mole; March 16, 1930. While she was still nursing her baby born June 14, 1929, she menstruated in November, 1929. December 14, 1929, she had a "normal" menstruation but she was nauseated. January 18, 1930, she had an alarm-hemorrhage. Cervix and vagina packed with gauze and patient rushed from her ranch home, four miles out in the country, to hospital. Glucose and salt solution given to build up blood volume. In ether anesthesia, retained secundines, small immature mole removed; uterus swabbed out with gauze wipe, then swabbed out with gauze containing half strength tr. iodine; then packed with iodoform gauze for 24 hours. Two weeks previous to this she expelled small masses of tissue and immediate operation was advised but refused on the ground that she did the same thing in her eleventh pregnancy and was delivered of a normal child at term. Uneventful convalescence. All blood clots and tissue masses were examined carefully and "fleshy" parts washed—no fetus was found. Mole degeneration (immature) of chorion detected by method of study outlined in this report and verified by histologic sections.

## CONCLUSIONS

1. The severity of the hemorrhage is no criterion of the size or age of the mole.

2. The typical large hydatidiform mole is an end product which has taken months to develop. (Meyer.)

3. The small, immature mole is none the less a mole, with all the syncytial potentialities of the mature mole. It may often be identified by the simple method of gross study herein described.

4. Careful inspection of all spontaneously aborted tissue will

(a) Increase the incidence of hydatidiform mole to "extremely common" (Meyer);

(b) Lower the mortality figures usually given;

(c) Substantiate the observations of Cierse (1847) that moles constitute a most common cause of abortion in the early months.

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### DISCUSSION

DR. FLOYD B. SHARP, Phoenix: After hearing Dr. Yount's paper, I am much impressed with the amount of work he has done on a subject which is extremely complicated in its many aspects. The study of hydatidiform mole as a clinical entity, its incidence, cause, diagnosis, and the best treatment is very difficult when searching the current literature. The gleanings of conclusive statistics is almost impossible because of the extreme variation in the experience of observers. One is struck, however, by the recent renewed interest in the disease. Attempts are now being made to outline methods for accurate study, and I believe that Dr. Yount's plea for more careful study of tissue from abortions is an important contribution to our line of thought.

As to incidence of hydatidiform mole, it is almost certainly true that our lack of exact knowledge on this item is due to our universal failure to study thoroughly so common a thing as an abortion, and to our failure to report cases of mole without complication or unusual gravity. It is probable that the growth of interest in obstetrics and the stimulation of the cancer research movement will call the attention of practitioners to the importance of closer study of clinical material and the reporting of cases of this kind. It is certain that the incidence of mole is greater than formerly believed and the importance of the condition is emphasized by the demonstration that nearly fifty per cent of chorioepitheliomata are preceded by mole. Authorities believe that this could be raised to one hundred per cent if proper observation into the past medical histories could be made.

Etiology of the condition is likewise not fully known. In addition to conditions set forth in text books it has been interesting to note that in two of the three cases of advanced mole, which I have seen and treated during the last four years, various drugs to induce abortion had been taken early in pregnancy. The third case had had a general anesthetic a few days after her first missed period.

Early diagnosis of the condition is not easy except in rare cases of passage of portions of the tumor. As in all potentially malignant conditions this is the ideal time to discover and treat them. Special attention should be paid to irregular bleeding, rapid increase in size of the uterus, and marked interference with the general health. Realization of the nature of the condition in advanced cases is usually easier, but the treatment more difficult.

Proper treatment, whether by radical or more conservative methods is still in dispute. The good surgeon and obstetrician will adapt the method best suited to the individual case. Again, it is here that more definite knowledge as to sequelae, complications, and results of different methods could be of help.

I am heartily in accord with the thought of Dr. Yount, that there is much to be gained by closer and more systematic study of material which probably passes under our eyes more frequently than we now think.

DR. R. H. THIGPEN, Jerome: I had a case of hydatidiform mole I should like to report. A Mexican woman who had a large family by a former marriage was supposedly pregnant for twelve months with irregular bleeding throughout that time. She was much larger than she had been for her normal pregnancies. An enormous uterine tumor was found and I did a good deal of curettage which I know now was not good management. The woman had a normal pregnancy and delivery not long afterward. The surprising point in this case was the duration of the pregnancy and the patient's increase in size over her normal pregnancies.

DR. H. A. REESE, Yuma: A well developed Mexican woman, the mother of several children, came to me for care during a pregnancy. I suspected hydatidiform mole and treated her expectantly. Later she seemed to terminate her pregnancy satisfactorily as a miscarriage. I observed her carefully over a period of one or two years but no malignancy was evident. I should like to emphasize the danger of malignancy in these cases, and the importance of observation over an extended period of time. Diagnosis can be made early in cases in which two or three of these moles are passed. The physician is then on the lookout for hydatidiform mole, for which this symptom gives the clue. The condition is very rare. My own experience has shown just one case in the one thousand cases I have attended. I should like to see by a show of hands how many of the doctors present have seen one or more cases of this sort. (Hands of about half of the group were raised). I see that the condition is not so rare as I had supposed.

DR. JOHN E. BACON, Miami: Ten years ago a healthy young woman was brought to the mining camp as a bride. Six or eight months later a spontaneous abortion terminated a case of hydatidiform mole. I did not know to do as Dr. Yount has suggested. Ten months later tuberculosis was diagnosed at camp and she was sent to Dr. Pottenger's Sanatorium where a diagnosis of malignancy of the chest was made.

Another woman was given proper diagnosis because of her symptoms. She had a terrifying hemorrhage and a cesarean section was performed. She has had two or three healthy little Mormons since.

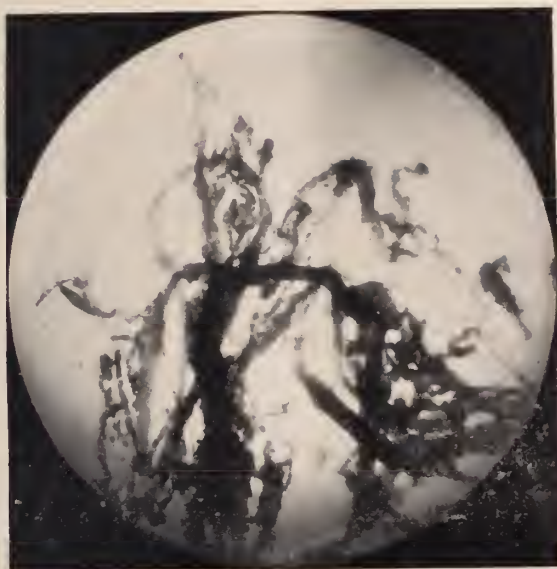


Fig. 1. Normal villi two months gestation ( magnified nine diam.).

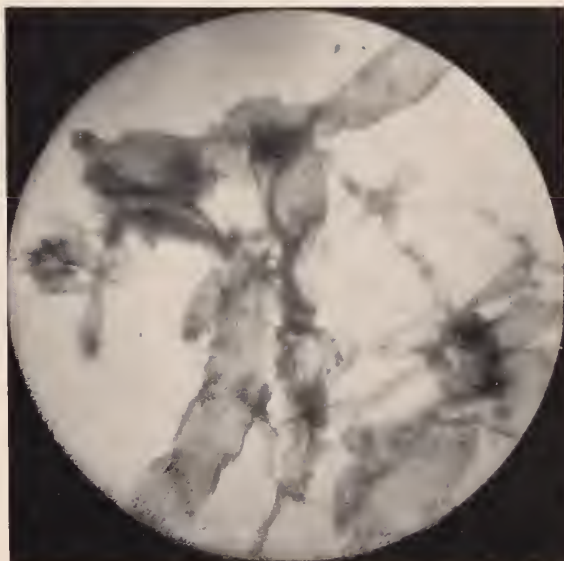


Fig. 3. (Case 2). Immature form of hydatidiform mole. Anatomical age about five weeks, showing hydatidiform degeneration and some slight changes due to maceration; also a few normal villi. (Magnified nine diam.).



Fig. 2. (Case 1). Hydatidiform mole, full blown form. Shows about one square inch of mole matrix suspended in solution, representing approximately one-thirtieth of the whole mole. About five months gestation.



Fig. 4. (Case 3). Immature form of hydatidiform mole. Menstrual age of mole two or possibly three months; twelfth pregnancy and fourth mole. The bladder-like degenerations are easily recognized with hand lens. (Magnified nine diam.).



## THE SIGNIFICANCE OF HEMOPTYSIS

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and

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Battle Creek, Mich.

(Read before the New Mexico Medical Society, at its Forty-eighth Annual Meeting, Raton, N. M., June 4, 5, 6, 1930.)

The spitting or coughing of blood in greater or lesser quantities is a frequently observed phenomenon, but there are few symptoms which may have a more varied origin. Various text books tell us that there are from twenty to forty different pathologic entities which may manifest themselves in this way as one of their symptoms. It is, therefore, a matter of importance that we should not come to any hasty conclusion in the presence of hemoptysis, whether scanty or profuse, temporary or constant, but, bearing in mind the many conditions with which it may be associated, endeavor by a process of elimination to differentiate the actual underlying cause.

The proper evaluation of blood spitting is not always an easy matter. Many physicians treat it lightly and tell the patient it is a little bleeding from the throat which will clear up. Blood-spitting, unless its presence can clearly and without any doubt be accounted for by some local specific condition, is never a light matter and it is a serious wrong to a patient to treat it with indifference and not endeavor to trace the condition from which it originates. Even one solitary hemoptysis in the history of a patient may have a very serious significance. It may betray the presence of an unsuspected neoplasm in the early stages. The point to be stressed is that bloody expectoration is never under any circumstances a matter that should be allowed to go unnoticed without a satisfactory reason for its occurrence being sought and established.

In this paper we shall attempt to point out the most prominent disease conditions which may have blood-spitting as a symptom.

### HEMOPTYSIS AS A SYMPTOM

Probably nine-tenths of hemoptyses are associated with lung disease and especially with pulmonary tuberculosis. While blood-spitting is commonly associated with pulmonary tuberculosis it is injudicious to associate them as cause and effect without verification. Crofton<sup>1</sup> states that the records of the Veterans' Bureau show that while eighty per cent of patients examined for tuberculosis show blood-spitting only twenty-five per cent of them have tuberculosis. In actual practice it will be found that from thirty to eighty per cent of all cases of hemoptysis are cases of pulmonary tuber-

culosis. In the latter disease blood-spitting occurs sooner or later in from sixty to eighty per cent of such cases. It makes little difference whether the bleeding results from actual invasion of the lung tissues or from the rupture of a tuberculous bronchial gland into a bronchus.

Broncho-pulmonary hemorrhage, without definite symptoms or signs of cardiac disease or ulcerous pulmonary disease, is due, in the very great majority of cases, to tuberculosis; and, even if this cannot be demonstrated at the time, it may, however, be demonstrated later or be verified at autopsy, as has happened in many reported cases. In early tuberculosis the sputum may be streaked with slight, bright red blood while in advanced cases the blood is dark red and copious from erosion of small arteries by tubercles.

While the presumption is strong that any patient with hemoptysis (if there is other supportive evidence) is tuberculous yet we would like to refer to the other conditions that should be excluded.

Bartlett<sup>2</sup> points out that hemorrhage from the lungs may be divided into four classes:

Hemorrhage due to some constitutional or blood disease;

Hemorrhage due to disease of the heart or blood vessels;

Hemorrhage due to disease of the lungs;

Hemorrhage due to miscellaneous causes.

Any valvular disease that has progressed far enough to produce engorgement and congestion of the lungs may give rise to blood spitting. In acute congestion the blood is bright red and frothy. It need not, however, as Sir St. Clair Thompson<sup>3</sup> remarks, be necessarily frothy nor need it be coughed up. The blood may just well up. This writer points out that hemorrhage from the lungs may be profuse and yet neither auscultation, percussion nor x-rays may be able to detect any physical sign of its origin. Hemoptysis may appear in emphysema, influenza, pneumonia, acute and chronic bronchitis, bronchiectasis, infection of the lungs, syphilis of the lungs, localized pneumothorax. Lung abscess, lung gangrene, or neoplasms in the early stage, when their presence may not be revealable by x-ray, may be accompanied by hemoptysis. A brisk hemorrhage may be the initial symptom of lobar pneumonia. Asthmatic paroxysms may be accompanied by blood streaked sputum. In the case of neoplasm there may only be one or two isolated hemorrhages, and such a history is important.

Among the constitutional conditions which may give rise to hemoptysis, we may class

those persons known as "bleeders." Libman and Ottenberg<sup>4</sup> report the occurrence of hereditary profuse hemoptysis in seven members of a family in which tuberculosis was excluded. The cause of the hemoptysis was unknown. Cases of vicarious menstruation occurring as hemoptysis, such as that reported by Chapman<sup>5</sup>, may also come under this connection. These hemoptyses occur only at the menstrual periods. In the writer's opinion any blood spitting occurring at this time is likely to come from a pulmonary tuberculous lesion, not necessarily demonstrable.

#### HEMOPTYSIS AND HEART DISEASE

A special word should be said in regard to hemoptysis associated with heart and vascular diseases. Repeated moderately large hemorrhages may at times be observed in young subjects, apparently coming from the lungs and giving rise to the suspicion of tuberculosis. Examination may, however, show the bronchial markings unusually increased and the size, and sounds of the heart altered. In these cases the causative lesion may be found to be an endocarditis, the sequel of some infectious disease, or a mitral stenosis. Rist and Rolland<sup>6</sup>, in five cases of streptococcal endocarditis exhibiting hemoptysis, found infarcts in the lung in two. Duken's case<sup>7</sup> of recurring polyarthritis with endocarditis of infectious origin showed at autopsy a hemorrhagic infarct in the lower lobe of the right lung.

In Ramond's case<sup>8</sup>, the patient, a youth of seventeen years, had suffered from scarlatina and chorea, the latter of which as the literature shows is a great producer of cardiac disturbance (choreic endocarditis). Examination showed mitral stenosis. The cardiac conditions were tolerated fairly well until the boy went to work two years ago when the exertion brought on severe hemoptysis. The heart could not stand the strain and pulmonary apoplexy was produced with infarct resulting in the hemoptysis.

In McMurry's<sup>9</sup> five cases of hemoptysis of circulatory origin three showed mitral stenosis, one aortic regurgitation with mitral insufficiency and one decompensation. In three of these cases a previous diagnosis of pulmonary tuberculosis had been made owing to the hemoptysis. The early morning rusty sputum is characteristic in this type of case.

Embolism and infarct in a pulmonary vessel, if not immediately fatal, may give rise to hemoptysis. Also the rupture of an aneurism, as in the case reported by Stewart<sup>10</sup> or leakage or pressure from an aneurism. Atheroma and high blood pressure can also be causative of hemoptysis.

A digression may be made here for a mo-

ment to consider the relative frequency with which hemorrhage is found in pulmonary tuberculosis, and other conditions in which the lungs are affected. Vinson<sup>11</sup> of the Mayo Clinic compared one hundred patients with pulmonary tuberculosis, one hundred with chronic bronchiectasis and one hundred with mitral stenosis with a view of observing the relative frequency of hemoptysis in these conditions. As far as could be observed the lesions mentioned were the only ones from which the selected patients suffered. Hemorrhage was observed in twenty-nine of the tuberculous patients, in eighteen of which it was moderate to severe. Pulmonary hemorrhage was found to be most frequent and most severe in the bronchiectatic patients; i. e. forty-nine cases, twenty-nine of which were moderate to severe. Only eighteen of the mitral stenosis patients showed a sputum streaked with blood.

#### HEMOPTYSIS FROM CONDITIONS IN UPPER RESPIRATORY TRACT

Distinction can usually be made between a hemoptysis originating from some condition in the throat and a pulmonary hemorrhage. The blood expelled from a non-pulmonary source cannot be aerated and is dark in color. This darkened sputum stops when the hemorrhage ceases, but in cases where a dark blood stained sputum originates from a pulmonary hemorrhage it continues for about twenty-four hours following the hemorrhage.

Sir St. Clair Thompson states that a good method of distinguishing whether blood comes from the lungs or bucco-pharynx is to throw the sputum into water. If the blood comes from the pharynx, larynx or gums, it is at once dissolved on shaking in the water; if it comes from the lungs it remains in one mass and insoluble. Profuse dark blood spitting seldom comes from affections of the upper respiratory tract. Bloody sputum may, of course, be associated with an epistaxis when the blood drains backward into the pharynx. The more usual causes of hemoptysis originating in the upper respiratory tract are associated with varices in the pharynx and base of the tongue, with hemorrhagic laryngitis, papilloma of trachea, neoplasms, foreign bodies, congestion from pressure of enlarged thyroid or aneurism.

#### HEMOPTYSIS DUE TO PARASITIC DISEASES

In a very extensive article Castellani<sup>12</sup>, formerly professor of tropical diseases in the Tulane University of Louisiana, says: "It would seem that the subject of hemorrhagic bronchitis of protozoal, helminthic and fungal origin deserves to attract more attention than has been the case hitherto. It should be remembered that the subject is of prac-



tical importance as all these conditions which I have mentioned are generally mistaken for tuberculosis."

Castellani particularly describes broncho-spirochetosis and broncho-moniliasis, accompanied by hemoptysis. While such conditions are more usually observed in tropical countries, the mycotic diseases are not unusual here. Bridge<sup>13</sup> reported seven cases of actinomyces five of which showed hemoptysis. Jaureguy<sup>14</sup> reported eight cases in hydatid disease, this condition not infrequently occurring in the United States.

#### MISCELLANEOUS CAUSES OF HEMOPTYSIS

There are numerous other conditions which may be causative of hemoptysis. Among these are various blood conditions, such as purpura, scurvy, pernicious anemia, leukemia. Rist and Rolland<sup>5</sup> say that changes in the blood, such as anemia from destruction of red blood corpuscles, or azotemia, may possibly be able to provoke hemorrhage independently of either an infarct or endocarditis of right heart. Mercurial stomatitis, phosphorus poisoning, cirrhosis of kidney or liver, and certain acute fevers may show hemoptysis. In stomach and duodenal ulcer and typhoid fever blood is frequently passed by the mouth but in these cases the condition is a hematemeses rather than a hemoptysis. Gout, according to Semon<sup>15</sup>, is a fertile source of pharyngeal hemorrhage. A minor unsuspected rib fracture may be the underlying cause.

#### DIAGNOSIS

Cases of persistent hemoptysis, in which pulmonary tuberculosis and heart disease can be definitely excluded, should be thoroughly investigated with the bronchoscope, bearing in mind the various conditions mentioned in which hemoptysis may occur. Special clinical diagnostic criteria for such special conditions should be tested. Chevalier Jackson<sup>16</sup> gives as an indication for bronchoscopy the appearance of any suspicious shadow on the roentgenogram. Endoscopy may be the only means of correct diagnosis. In some cases injection of the bronchial arborization with lipiodol has been advocated. The writers<sup>17</sup> have been opposed to this procedure in cases of hemoptysis but recommend waiting at least a month after cessation of blood spitting before the use of iodized oil as a diagnostic method. The presence of unsuspected foreign bodies may be indicated on a roentgenogram. Some conditions that give rise to hemoptysis, such as carcinoma of a bronchus, are not always demonstrable premortem.

#### TREATMENT

In the case of hemoptysis as a part of the syndrome of pulmonary tuberculosis the

treatment, of course, is part of the generally recognized treatment of this disease.

In the case of non-tuberculous pulmonary disease the treatment will depend upon the degree of hemoptysis and the nature of the underlying cause. Astringent and coagulating drugs may be used to control the bleeding. Sir St. Clair Thompson recommends adrenalin as an astringent. He also says that in moderate hemorrhage a hypodermic injection of morphine, (gr 1-6 to 1-4) with atropin (gr. 1-200 to 1-150) is one of the readiest, quickest and most reliable remedies.

Among the newer drugs Houssay<sup>18</sup> and Pissavy<sup>19</sup> recommend hypophyseal medication; gelatinized serum is recommended by Pierre<sup>20</sup> and many others. The new calcium salt, (calcium gluconate) is highly favored as a rapid coagulant and may be injected intramuscularly without harm. The intravenous use of calcium chloride is an old remedy. In the experience of the writers drugs have proven of limited value, except morphia to quiet the patient. When the bleeding persists in spite of absolute bed rest with shoulders elevated so that expectoration may be accomplished with the least effort, surgical methods should be adopted at once such as pneumothorax or phrenicotomy.

Wiggers<sup>21</sup> of Ann Arbor, who made a very thorough physiologic investigation of the treatment of hemoptysis, says, "Early in the course of hemoptysis when the breathing has not altered except for an occasional cough, one is dealing practically with a normal subject and the object of paramount importance is to reduce the bleeding by drugs that lower the pressure within the pulmonary circulation. Investigation has shown that this cannot be accomplished by vasomotor drugs such as the nitrites and that cardiac depressants, such as chloroform and pituitary extract, must be resorted to. If hemorrhage has continued till the heart is very rapid and respiration is accelerated with anemia of the cerebral center, pituitary extract is the only remedy that will elevate systemic arterial pressure and at the same time lower it in the pulmonary circuit."

In hemoptysis due to heart conditions Ramond<sup>2</sup> recommends absolute rest in bed, careful dieting and digitalis as immediate and continued measures. He thinks that a pulmonary infarct (due to cardiac conditions) has a natural tendency to recover unless associated with asystolia.

In moderate hemoptysis, when an artificial pneumothorax is not possible, Knoll<sup>22</sup> recommends the application of compressing rubber bandages on the affected side so as to suppress completely the respiratory movements on this side and on the diaphragm.

Surgery has now a prominent and important place in the treatment of serious hemoptysis. If large vessels are eroded, tying the external or common carotid may be necessary. Pneumothorax and phrenicotomy or evulsion of the phrenic nerve have given excellent results, a fact well known to this audience. Tuffier<sup>23</sup> suggested and practiced pleurolysis in preference to artificial pneumothorax. Dalton<sup>24</sup> found venesection successful in a case of hemoptysis with mitral stenosis.

Beye<sup>25</sup> says that ligation of the pulmonary artery has not been successful in controlling cases of lung infection. In two cases reported, however, ligation of the branch of the pulmonary artery to the lower lobe of the right lung was attempted to control hemorrhage. In these cases a partial thoracoplasty and phrenic neurectomy had been tried and failed. The author considered the operation justifiable in such cases when the hemorrhage is coming from the branch of the pulmonary artery or pulmonary vein. If it is coming from a bronchial vessel ligation of the pulmonary artery will do no good. In his two cases Beye found this method successful.

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## DISCUSSION

DR. R. O. BROWN, Santa Fe: Three members of my own family, including myself, started our residence in the Southwest by reason of a little blood in the sputum. I have a sister-in-law who had 17 full-sized hemorrhages before the doctor admitted she had tuberculosis. I had four or five myself and an elder brother raised pinhead drops of blood in his sputum and after about thirty sputum examinations we discovered he had some tubercle bacilli in his sputum. In the years since 1916, since I have been out here, the largest part of my work has been in tuberculosis and when I come upon history of blood spitting that has been ascribed by doctors to some other cause, I think that is a matter of great importance, as in some of these cases later on when a pulmonary hemorrhage occurs, they go to a doctor who makes a more thorough examination with diagnosis of tuberculosis, which is anywhere from a year to four or five years after it should have been made. It is rather difficult at times to recognize tuberculosis; sometimes it seems no job to me at all, while at others it is quite difficult and I rather suspect that there are times when it is impossible for us to find it, yet it still exists.

DR. F. D. VICKERS, Deming, N. M.: I think this a very important paper. Some of these cases are extremely interesting and it is very difficult to definitely diagnose them. I have a case now which raises a little blood from the right lung, which I am sure is bronchitis. I think we in the Southwest are prone to think that all these cases are tuberculous, when many times they are not.

DR. J. M. BRITTON, El Paso, Texas: We have many tuberculars in El Paso and every now and then some patient will come into my office who has had a slight hemorrhage which he thinks is from the nose or throat. He will say, "I have had a little hemorrhage which I think was from my nose." It is probably only one case in a thousand in which the hemorrhage is from the nose or throat. If one could just watch these cases, they would see that they turn out to be tuberculosis.

DR. R. J. GROOM, Santa Rita, N. M. I watched a very interesting case, a woman, aged 24, with tuberculosis. At each menstrual period, she would start in about ten days before her menstruation with cramps, nausea and vomiting, losing as much weight during that time as she would put on between times. We felt that it was advisable to bring about menopause, which we did with x-ray. After that she became an arrested case. Possibly about two years after she was pronounced arrested, she returned to her old home for a visit and while there commenced to spit up blood, so she came immediately. There was nothing in the physical examination or x-ray to account for this blood spitting. However, 28 days after she repeated the process, and for a year and a half that continued at those intervals. During that period we could never at any time ascertain any activity or chest finding that would account for the blood, and finally it ceased.

DR. F. M. HELLER, Pueblo, Colo.: It is easy to think in these cases of blood-spitting that every case is one of tuberculosis and the frequency with which this symptom is present is significant. I think, however, that among such cases are those of mycotic infections. Oftentimes individuals born and raised in Colorado will come into the office spitting blood and frequently on examination I find mycotic infections. These cases are extremely interesting; they have a mycotic process which produces a thin



spitting of bloody substance; it is mucus which is blood-stained. It is surprising also how many people who come to Colorado for tuberculosis have a mitral stenosis, which is usually of the type of enlarged heart on the left side, with which they often get in the mornings a bloody sputum. Then there are a lot of children who develop a lung condition, a chronic infection of the lungs, non-tuberculous, and these cases will often go on with exacerbation and an acute condition will develop with spitting of blood of a bronchitis nature.

DR. A. J. STREIT, Amarillo, Texas: In Amarillo we see very few cases of tuberculosis, but every once in awhile we do find patients who come to our office with spitting of blood. I remember one or two cases with mild bleeding from the septum and from the turbinates, some from the tonsils, and one case where it was coming from the upper part of the larynx.

### VINCENT'S INFECTION

R. J. GROOM, M. A., M. D.  
Santa Rita, New Mexico

(Read before the New Mexico Medical Society, at its Forty-Eighth Annual Meeting, at Raton, N. M., June 4, 5, 6, 1930.)

#### INTRODUCTION

Vincent's infection includes more than Vincent's angina, and is an inflammatory lesion due to infection by the Plaut-Vincent fusiform bacillus and spirillum. While it is usually a disease of the mouth, Vincent's organisms normally inhabit several other locations and can produce lesions in any of these areas. It is characterized, first by an inflammatory process, later by the formation of a pseudo-membrane, and in the still later stages by the production of a sharply defined ulceration with characteristic "punched-out" appearance. While in the majority of cases numerous other bacteria may be found in the smears taken from the lesion, there is always a preponderance of Vincent's fusiform bacilli and spirilla.

#### ORGANISMS

The organisms associated with Vincent's infection are morphologically unlike. One is a short bacillus of fusiform shape, Gram negative in staining; the other is a spirillum which in general resembles that found in relapsing fever and is Gram positive. These organisms are anaerobic and can be cultured on a variety of media by anaerobic methods. There is still considerable dispute as to whether they are separate organisms or different cycles of the same organism. Tunnicliff believes that the spirillar forms are simply stages in the life cycle of the fusiform bacillus. Zinsser holds that they are separate and distinct organisms.

#### HABITAT

It is interesting to note that these spirilla are probably the organisms first seen in scrapings of tartar from the teeth by Leuwenhoek in 1683. They are found in relatively large numbers in tartar from carious

and ill-kept teeth, and in tonsils and adenoids in a large per cent of the cases. Miller and Epstein found spirilla present in seventy-seven per cent of 160 apparently normal mouths and fusiform bacilli present in ninety-two per cent. Their presence in other localities of the body is not as generally recognized. Gifford reports finding both bacilli and spirilla in the conjunctival sac and meibomian glands. Pilet found them present in fifty-one per cent of preputial secretions of normal males and sixty per cent of the smears made from the material about the clitoris. The principal habitats of fusiform bacilli in the human body are:

1. The crypts of the palatine tonsil;
2. Tartar deposits on the teeth;
3. The smegma in the preputial sac and from about the clitoris;
4. And possibly in the intestinal tract.

#### DIAGNOSIS

There has been some little argument, since these organisms are so frequently found in apparently normal tissue, as to whether or not they are the cause of Vincent's disease or whether they are purely invaders. They are infrequently found in clean and healthy mouths but are almost always found in an infectious condition of the teeth, gums, and tonsils, and in Vincent's disease. While other organisms may be present, the spirilla and fusiform bacilli are by far the predominating organisms; and, as the infection or disease clears up, these organisms disappear. Epstein has said that these organisms are "opportunists" and that, when they do cause infection, it is in locations where they are normally found or perhaps transplanted to the lesions produced, and that they set up disease by taking advantage of the lowered resistance caused by such other infection.

Whether or not they are secondary invaders, they very frequently predominate the pathological picture and so are of preeminent importance.

They may be found in numerous diseases where they have no part in etiology, such as scarlet fever, streptococcal sore throat, carcinoma of the mouth, syphilis and tuberculosis of the throat. This, of course, is explained by the fact that the mouth is the normal habitat of these organisms.

#### LESIONS PRODUCED BY VINCENT'S ORGANISMS

##### I. Oral Passages:

(a) Vincent's angina, which at times may become epidemic and is the lesion in which these organisms were first recognized.

(b) Noma. That they are the etiological factor in the production of this disease

has been definitely established by Weaver and Tunncliff.

(c) Pharyngomycosis, a disease characterized by the presence of actinomyces-like granules in the tonsillar crypts and an exudate on the tonsil and pharynx.

(d) Pyorrhea Alveolaris. For a long time these organisms have been regarded as of secondary importance in this disease, but they are so constantly present, and can account for the putridity of the lesions and the amount of necrosis seen in this disease, that they undoubtedly play a most important part in its production.

(e) Ulcerative Gingivitis or Trench Mouth. This condition became epidemic during the world war, and that these organisms are the cause of this disease was well established at that time.

II. Lesions of the Respiratory Tract. Their relation to the production of pulmonary gangrene and fetid bronchitis has been discussed by numerous authors. Pilot and Davis have reported thirty-seven cases of pulmonary gangrene due to Vincent's infection. Pulmonary abscess may follow tonsillectomy in cases infected with Vincent's, or ether pneumonia, perforating lesions of the trachea or bronchi, foreign bodies in the air passages, or other pulmonary infections, and are due to the organisms of Vincent's angina being carried in from the mouth by inhalation of droplets laden with these organisms. Possibly, in a few instances, the organisms may enter the lung as emboli from some other focus. However, it is very seldom that the organisms can be demonstrated in the blood stream.

III. Cerebral Lesions. There are a few cases reported in the literature of metastatic putrid brain abscesses, complicating putrid bronchiectasis, in which fusiform bacilli and spirilla have been demonstrated in the brain lesions.

IV. Lesions of the Ear. One fatal case of mastoiditis due to Vincent's organisms has been reported by Ottoni, and numerous cases of infection of the middle ear and sinuses are to be found in the literature.

V. Lesions of the Bone. A few cases of osteomyelitis of the inferior maxilla due to Vincent's infection following the extraction of teeth have been reported.

VI. Lesions of Lymphoid Tissue. Enlargement of the cervical and mediastinal glands due to infection by these organisms is rather common.

VII. Lesions of the Blood. Kilduffe is of the opinion, as is also Cottrell, that Vincent's organisms may be the causative factor in infectious mononucleosis, and Cottrell has demonstrated these organisms in smears

from six cases. However, in metastatic lesions, such as those of the lung or brain, the organisms have not been demonstrated in the blood.

VIII. Genito-urinary Lesions. Gangrenous balanitis is not uncommon in cases with a long phimotic foreskin in connection with uncleanness.

IX. Miscellaneous Lesions. Gangrenous infections of the finger due to Vincent's organisms being planted by biting the fingernails have been reported. In two of my cases of cholecystitis, Vincent's organisms have been demonstrated in the bile obtained by transduodenal drainage. In both cases these organisms were the predominant bacteria found.

#### SYMPTOMS

The symptoms vary with the location of the lesion. Malaise and fever are common in the acute infection. The temperature may reach as high as 104 or 105, although usually low. The pulse is ordinarily rapid. There is loss of appetite, disturbance of digestion; and, if the lesion is in the tonsils or gums, there is, ordinarily, severe pain in swallowing. The ulcerated surface bleeds readily on pressure.

The involved area at first is inflamed and swollen; later, becomes covered with a white or grey, loose, thin coating; by the third or fourth day the pseudomembrane becomes thick, white to greyish brown, and gives off a peculiarly offensive odor. The lymph glands draining the area are slightly enlarged. While, as a rule, the lesions are acute, they may become chronic in such forms as gingivitis, balanitis, bronchiectasis, and pyorrhea alveolaris.

#### DIFFERENTIAL DIAGNOSIS

In considering lesions, especially acute ulcerative ones, in any of the localities where Vincent's organisms are normally found, Vincent's infection must be considered. The chief lesions to be differentiated are diphtheria, tuberculosis of the throat, syphilis of the throat, acute tonsillitis, septic sore throat; and it must be remembered that, since Vincent's infection flares up where some other lesion has reduced the local resistance, not infrequently Vincent's disease may be present and may play a most important part in the pathology along with one or another of these infections. I have seen one fatality due to Vincent's angina superimposed on a tuberculous throat, flaring up and proving rapidly fatal after a cauterization. And two or three instances, where both diphtheria and Vincent's infection have been demonstrated, which proved fatal in spite of large doses of diphtheria antitoxin, I am convinced that death was due to the Vincent's rather than the diphtheria. The differential



diagnosis in these lesions rests on the characteristic pseudo-membrane and ulceration with a predominance of Vincent's organisms in the smear, as well as on the results of the treatment.

#### TREATMENT

In reviewing the literature on the treatment of Vincent's angina, we find that here, as in most diseases where there is no definitely proved specific, numerous therapeutic agents are claimed by various authors to be practically specific, and that the number of drugs recommended in the treatment of this disease is almost too great to mention. However, three drugs at present seem to be more used than all others; sodium perborate, arsphenamines and bismuth; perhaps the majority are using arsphenamines. Other drugs used to a considerable extent are various anilin dyes, especially methylene blue or gentian violet, potassium dichromate, and copper sulphate.

Personally, the best results that I have obtained have been with sodium perborate. I have been unable, either with ten per cent arsphenamine and glycerine used locally or arsphenamine intravenously to obtain the satisfactory results reported by its adherents; and when it is necessary to resort to hypodermic medication, as in cases of gangrene or bronchiectasis. I prefer bismuth intramuscularly to the arsphenamines. While we do not hesitate to give arsphenamine in syphilis, we must recognize that it is not without danger. Within the last month, I have had two untoward complications from the administration of neoarsphenamine, one a pulmonary embolus followed by pneumonia which fortunately did not prove fatal; the other, an acute nephritis. Not infrequent deaths have been reported following the administration of the arsphenamines.

The treatment advocated by Bloodgood, and which has proved so satisfactory in his hands that he insists that it is a specific, is sodium perborate. He makes a thick paste of the salt with water, applies it locally to the infected ulcerated areas, allowing this to remain in the mouth for about five minutes once a day; in addition he has the patient gargle a thinner solution two or three times a day. Sodium perborate itself is very disagreeable and unpleasant to use, and I have found some of the preparations which are aromatic more satisfactory. In only the severe cases is daily office treatment by the physician necessary. The mistake we make is in not using the solution of sodium perborate frequently enough; and, instead of gargling and rinsing the mouth two or three times a day, the patient should be instructed to use it in the mouth at hourly intervals.

Treatment should be continued for several days after all lesions have disappeared and smears from the site of infection show no organisms.

That sodium perborate is a specific for Vincent's angina, I doubt; but since the organism can grow only in anaerobic conditions, an oxidizing agent is logical treatment for the disease. It both removes necrosed material beneath which the organisms flourish, and produces oxygen in the otherwise anaerobic area, and by so changing the media, makes it impossible for the organisms to continue. The curative results in the use of sodium perborate are due to the change in the media where the infection is present, rather than to bactericidal action of the drug. I do not believe any remedy has yet been developed which is specific to Vincent's infection in the sense that quinine is in malaria. However, it is results and not methods that count.

#### PROPHYLAXIS

Since Vincent's organisms practically always are found in unclean mouths, the greatest prophylactic measure is, of course, cleanliness of the mouth with eradication of pyorrhea, decayed teeth, and infected tonsils whose deep crypts filled with carious material are ideal locations for the propagation of Vincent's. Since the war the instances of Vincent's infection have been markedly on the increase. However, we have seen fewer cases in the community where I live within the last year than we did in the previous two years. I attribute this to the fact that the dentist in this community has been an enthusiastic advocate of the use of sodium perborate as a mouthwash and uses it following all extractions and work on teeth in his office and has educated a very considerable part of the population to use a sodium perborate preparation more or less routinely as a mouth wash.

Soda fountains should all be required to use paper cups and dishes which can be destroyed. The habit of the use of a common water bag for a whole gang of working men should be discouraged, as both of these have been prolific sources in the spread of this disease.

#### CASE REPORTS

In reviewing the literature, I can find only one case reported of Vincent's angina in a toothless mouth, and that was in the case of a child six months old who has as yet cut no teeth.

Case 1. Male, white, age 53. Past history negative. His upper teeth had been extracted nine years previously and his lowers five year ago. His general health had been good. The patient came into the office complaining of very painful, sore throat. When first seen, tonsils and pharynx were red and inflamed, but no patches of ulceration were visible. Temperature 102°; pulse 110°. On the second day grey brownish patches were found on the tonsils

and uvula, and by third day the mucous membrane of the nasopharynx was covered with a similar membrane. A diagnosis of diphtheria was considered, but cultures from both nose and throat were negative, and the smears showed only Vincent's organisms. On intensive treatment with sodium perborate of both nose and throat, pain rapidly subsided; in the course of five or six days the ulceration had practically cleared, temperature dropped to normal, and the patient felt greatly improved. He was advised to continue the treatment, however, and not to return to work for at least another week. Ten days later, he again reported complaining of malaise, loss of eighteen pounds weight in two weeks and was expectorating foul smelling sputum streaked with blood, which on examination contained fusiform bacilli and spirilla. The patient was started on intramuscular injections of bismuth in addition to continuing the use of sodium perborate in mouth and throat. Coughing and expectorating have lessened and he is gaining back weight and strength gradually.

Case 2. Child, seven years old, when first seen had typical *sordes* on the gums, pseudo-membrane on tonsil, and "punched out" ulceration on tongue and buccal surfaces. The throat was so sore that the child absolutely refused nourishment and was fed for a few days by rectum. The lesions were treated locally with 10 per cent arsphenamine in glycerine and 13 grams of neoarsphenamine were given intravenously at five day intervals. Later, the child was fed by stomach tube as she was unable to retain nutrient enema. In spite of treatment, she became rapidly more toxic and died on the tenth day.

Case 3. Child, three years old; when first seen had extensive greyish membrane on both tonsils. There was a case of diphtheria in the same family, and, without waiting for a report from culture, diphtheria antitoxin was administered. Report on culture when obtained was positive; however, smears from the throat showed only Vincent's organisms. Following the administration of antitoxin, the toxic symptoms disappeared to a considerable extent although the membrane did not disappear as rapidly as would be expected of a case of diphtheria under treatment; after three or four days extensive ulceration of the tonsils was present. The child's condition rapidly grew worse with marked prostration and toxemia with very little improvement in condition, in spite of both antitoxin and local application of arsphenamine; in the fourth day he died.

Case 4. Male, age twenty-eight, having far advanced pulmonary tuberculosis with some pharyngeal involvement. He had been in the Veteran's Bureau Hospital for the past two years, and showed marked *pneumonia alveolaris*. Because of the pain from swallowing, the arytenoids had been cauterized. Painful swelling of the nasal pharynx soon developed and a thick, greyish membrane bleeding easily on pressure followed. Pain became more marked, the patient lost weight rapidly; temperature rose to 104° daily with rapid pulse. Smears from pharynx showed a predominance of Vincent's organisms. Patient returned to the Veteran's Hospital where the condition was attributed entirely to tuberculosis; within seven days after the onset of pharyngeal lesion, the patient died. How much of his condition was due to tuberculosis and how much to superimposed Vincent's angina is problematic. However, this seems to be too fulminating a case for tuberculosis alone.

#### SUMMARY

1. Vincent's infection is very prevalent and at times a serious and even fatal disease.

2. The organisms are normally found in the presence of uncleanness in various other localities than the mouth and can become etiological factors or disease in these locations.

3. Other infections may so change the media or lower the local resistance that the already present Vincent's infection may flare up and become actively pathological.

4. The most important treatment is prophylactic.

5. Sodium perborate has proved more satisfactory in the hands of the author in the treatment of Vincent's infection than any other remedy and holds less possibility of serious complications than the arsenicals.

6. The cure and prevention of the disease is brought about by change of the media so that the organisms can not thrive in their normal habitats.

#### DISCUSSION

DR. M. K. WLYDER, Albuquerque, N. M.: I think we have all enjoyed Dr. Groom's paper. I was very much interested in the case he mentioned of the man who developed a tingling in his arms and legs. I recently had a case of the same kind, a boy 12 years old, who had typical Vincent's, the throat and tonsils bleeding. The swab showed Vincent's organisms and we failed to get any diphtheria by swab and culture. However, with sodium perborate, the throat cleared up, but a few weeks later he developed typical post-diphtheria neuritis. I never heard of neuritis developing in these cases except the one the doctor mentioned and the one I had. It seems to me perhaps the Vincent's organism is more prolific and overshadows the diphtheria condition, because there were patches in the throat and though I had both swabs and cultures made, they were negative for diphtheria.

DR. A. J. STREIT, Amarillo, Texas: Dr. Groom has given us a very timely talk on this clinical condition and is one that may occur in the real young as well as the older children. There is usually quite a lot of pain. The child says, "Mother! my mouth hurts." Usually there is quite a lot of swelling around the gums. The temperature goes up to 101 or 102, according to the amount of involvement. This sort of infection may not always show upon making microscopical examination, so it has been my practice always to consider anything very suspicious where there has been a sore mouth for as long as four or five days. You will find these children usually come more or less from non-hygienic strata: they are more of an illiterate type; the mother is not careful of the diet. If you watch for these infections, you will usually find more of them in this type, particularly among the Mexican children who use a common drinking cup and patronize soda fountains which are not kept clean and where the hygienic conditions are not good. We ought to try and teach more the value of cleanliness.

DR. J. M. BRITTON, El Paso, Texas: I enjoyed Dr. Groom's paper very much. I have encountered many cases of this infection in my practice and my treatment is ten per cent copper sulphate. This acts like magic and then I follow it with hot gargle of sodium perborate, which in nearly every instance affords immediate relief. For ulcers there is nothing like copper sulphate, 10 per cent. It clears them up right away. Do not be afraid to



smear it on a piece of cotton on a steel applicator and put it right down on the ulcers; then follow it with hot gargles of sodium perborate and you will get results.

DR. J. R. LEMMON, Amarillo, Texas: In a recent discussion at the New York Academy of Medicine, one series of cases was treated with salt solution, another series treated with sodium perborate, and still another series with arsphenamin. Those treated with normal salt solution got well just as soon as the other cases. We treat them first with tincture of iodine, then follow with Fowler's solution and then for home treatment ask the patient to use sodium perborate and usually have good results.

DR. F. D. VICKERS Deming, N. M.: I have a room in my office that is used by a dentist, who sees many cases of trench mouth. He uses perborate of soda, makes a paste of it and rubs it in, and usually they clear up very quickly under this treatment.

DR. GROOM (closing): There is still a question in my mind as to whether the case I mentioned was post-diphtheritic neuritis, or Vincent's, acting the same way. I am unable to find any cases in the literature to support our cases.

## PREVENTIVE MEDICINE AS APPLIED TO PEDIATRICS

MELDRUM K. WYLDER, M. D.,  
Albuquerque, N. M.

(Read before the New Mexico Medical Society, at its Forty-eighth Annual Meeting, Raton, N. M., June 4, 5, 6, 1930.)

In these days we hear much of prophylaxis, health examinations and other preventive measures. Prevention of disease and suffering is the primary function of our Health Departments. Take prevention out of their work and they could not exist. Yet, with all the propaganda of prevention that has come on in recent years, there are many who think only of prevention in medicine as applied to birth control.

Pediatricians take and always have taken, the lead in preventive medicine. Pre-natal care is in the field of the obstetrician. By the proper supervision of the mother's diet, much can be accomplished and rickets can be prevented. By giving medicine to expectant mothers, cretinism, myxedema and muscular dystrophies may be avoided. In known cases of syphilis in the parents, early and vigorous anti-luetic treatment will give us a baby free from syphilis. Birth injuries should be avoided if it is possible to do so, for they leave in their wake much suffering and anguish. I need hardly speak of the importance of cleanliness and asepsis in the avoidance of impetigo contagiosa, pemphigus, wound sepsis, erysipelas, conjunctivitis and stomatitis.

That splendid observer of the 18th century, Edward Jenner, brought out a prophylactic measure that has saved hundreds of millions of lives and untold suffering and by the universal use of vaccination against

smallpox, this disease could be banished from the earth. This has been absolutely proven, and yet there are many otherwise intelligent people who fight vaccination. An hour could be spent on this subject alone. Diphtheria is another disease that can be banished from any community that will make the effort. The universal use of T.A.T. or Toxoid will accomplish this. We should bow our heads in shame and admit our failure whenever diphtheria is allowed to show its head, for T.A.T. should be given to every baby when six months of age; and six months is the time of choice, for a natural immunity exists up to that time. The earlier it is given the less reaction. In older children and adults the reaction will be more severe. An asthmatic or eczematous baby should be tested before giving the first injection. This can be done by first injecting 1/20 c.c., waiting one-half hour, then giving 1/10 c.c. and wait another hour and if there is no reaction, give the first injection. A week later give the second and in another week give the third injection. Four to six months later do a Schick test to see if the baby has acquired an immunity and if not, give a second course which will be almost universally successful. Always remember that the Schick material must be freshly prepared to be dependable.

The use of convalescent serum is now recognized as dependable. In poliomyelitis, if given intraspinally and early it is most valuable. The trouble is the difficulty of obtaining it. The large baby hospitals get all they can from their convalescent patients and keep it on hand but for the man in general practice it is hardly available. For measles it is available as there is always some child who has recently recovered from measles who can give a little blood. Two to five c.c. of serum from a patient who has recently recovered from measles will prevent it in another child in ninety-five per cent of cases, and where not entirely prevented, it will be so modified that it will not be serious. Think what this means in the case of a frail, under-nourished, tuberculous or athreptic baby. It means the difference between life and death. If a suitable donor who has had measles cannot be found, 30 c.c. of whole blood from a parent who has had measles, injected into the gluteal muscles has the same effect. Convalescent serum also works in mumps, chickenpox and encephalitis lethargica.

By giving iodine one week twice a year, we may keep up the iodine content of the thyroid and this will prevent many of the goiters of early life. Of pertussis vaccine we are not so sure, but it is the best thing we have

and in some cases it seems to give beautiful results; in others it fails. It should be used both as a preventive and curative agent.

No sane person now questions the efficiency of typhoid vaccine. Any community that will make the effort can now be free from this fever. In all the wars previous to the World War, typhoid fever killed more soldiers than the enemies' bullets. In the World War typhoid fever was ruled out. This is one of the contributions that Medicine gave toward winning the war. What other profession has done as much?

Tetanus antitoxin is a sure preventive, but the reaction is some times quite severe. As to scarlet fever serum, the best advice is that it should not be used as a preventive for the reaction is often more severe than a mild case of scarlet fever and its protection is for such a short time that the protection it gives is not worth the risk. It is, however, a big help as a curative agent in severe cases.

In hydrophobia the treatment must be instituted at once, especially if the bites are on any part of the body not covered by clothing, as these bites are always much more dangerous. The teeth of the biting animal in passing through the clothing leave much of the virus on the clothes. In order to be safe, when the bites are on the hands or face, begin treatment at once for it can be discontinued if the dog is proven to be free from rabies.

In tuberculosis the separation of infants from exposure to open cases is the best measure, together with sun baths. The feeding of tubercle bacilli of low virulence as advocated by Calmette and Guérin has not yet passed the Board of Censors and is not considered a safe procedure.

Rickets does not interest us much out here. Just let the baby get our sunshine and there will be few cases. However, in locations not so fortunate as we are, by the use of cod liver oil and viosterol, together with the little sunshine they have and the ultra violet light, rickets is preventable. And we, here, should give cod liver oil not so much for its vitamine D as our sunshine will prevent rickets, but for its vitamine A that raises immunity.

We give tomato juice and orange juice so commonly that scurvy is so rare few doctors would recognize it if they saw it. By clearing up the foci of infection we will reduce the number of cases of rheumatism and perhaps of chorea. However, the question of chorea is debatable.

Coeliac disease is probably preventable. These children are unable to digest starches. The tendency among some people during the

second year to make up the diet principally, and sometimes entirely, of cereals, undoubtedly causes some of these cases.

Nervous disorders are a hard problem. Nervous, irritable mothers raise nervous, irritable children, while on the other hand, parents that are cool, calm and deliberate in their actions, raise children of that same kind. This is part heredity and in part environment but you have all seen a fussy, nervous youngster taken to a hospital, or taken by an aunt who understood children and in a few days have the child's behaviour so changed you would not recognize it as the same individual. The prevention of behaviouristic and nervous troubles then lies in teaching the parents how to live with their children.

Marasmus or athrepsia is a condition we do not see as much as we used to since the balancing of the child's diet is becoming generally understood. By meeting the child's caloric needs, feeding the proper proportion of fats, sugar, protein and mineral salts and supplying the necessary vitamins and remembering that when a child does not thrive when given a proper diet there is always a reason. Look for this reason, clear up the foci of infection—it may be an ear, or a mastoid, or one of the accessory sinuses—and this condition will clear up. Keep the foci cleared up and these conditions will not develop.

Nutritional anemia results from keeping the child too long on a milk diet. By the early introduction of iron containing foods, this condition can be avoided.

Eczema can be prevented in those babies who show a tendency to exudative diathesis by feeding skimmed milk, as butter fat is often the cause of the irritation and, by increasing the amount of cod liver oil. This helps in two ways, first supplying a fat that is easier handled and increasing the vitamine A.

By boiling the milk we prevent septic sore throat, undulant fever, bovine tuberculosis and all milk borne infections.

I wonder if we are as interested in prevention as we are in curing. The prevention of disease is not as spectacular as its cure, but it is much surer and better for the patient and we are slowly but surely gaining ground. We are seeing diseases that were once dreaded, put in the class of preventable. Only by studying statistics can we get the true value of prevention and the physician who keeps his little charges out of danger is doing them a much greater service than the one who tries, too often in vain, to rescue them after the trouble has arisen.



## DISCUSSION

DR. F. M. HELLER, Pueblo, Colo.: I think a paper from an obstetrician on the subject of preventive medicine is extremely interesting because of the fact that our advance in longevity has come so much through his efforts. We have increased the length of life because of the prenatal care in saving the child. I enjoyed the paper very much and only have a little to add, not to criticize. Dr. Wylder spoke of the problem of chorea and rheumatism in the child. That subject is open to a complete discussion insofar as we can expect the mortality rate from heart disease, which is largely initiated in childhood, to be reduced. There is the infectious attacks on the valves of the heart, acute rheumatic fever. It has been attacked by the general practitioner, by the pediatrician, and by the specialist, removal of the tonsils and no doubt every one has read in recent literature, upon the frequency of cardiac lesions in childhood after the tonsils have been removed.

Dr. Wylder did not speak on the one subject which to my mind is most important under the treatment of acute rheumatic fever, though of course this is still in doubt. To my mind when a child develops a fever, or a cold, or infection in the sinus of the nose and throat, it is most important that that child be kept in bed until the fever is absent. One thing the doctor mentioned only slightly, which to my mind is of great importance and that is frequency with which one will have a mastoiditis, often without pain or swelling, in which the symptoms are of the intestinal type. No doubt Dr. Wylder will be able to give us something on that subject, which will be of great interest.

DR. F. D. VICKERS, Deming, N. M.: When Dr. Wylder closes the discussion I hope he will tell us what kind of tonsils ought to be taken out, whether certain or all of them ought to be taken out, and if taken should stubs be taken out also, and if this is done, will it prevent rheumatic fever?

DR. J. M. BRITTON, El Paso, Texas: I want to say a word in regard to chorea. I have had a number of cases, one in particular a child 9 years old, the niece of my office girl, who had chorea for two years, the worst case I ever saw. She had very badly hypertrophied tonsils, badly infected, but her people hesitated about having them removed. I told them I could not promise them anything, but I felt that the tonsils should be removed. I operated that child and she was relieved immediately and has had no trouble since, though that was five years ago.

In regard to "blind" mastoids, we have one or two good men in El Paso, who are very good at that. I remember several cases last summer which were x-rayed and found immediately.

DR. C. F. MILLIGAN, Clayton, N. M.: I was very much interested in Dr. Wylder's paper. One phase I think we should stress and that is the mild cases. The severe cases of heart trouble and tuberculosis the doctor has mentioned will be brought to the specialists. The parents will realize that something is wrong with them and bring them in, but the general practitioner sees a few cases that are let go. The general practitioner has not time to bother with these things, but these cases will go on often into serious conditions if not taken care of. I think we should instruct our general practitioners to look after these cases more. We will do better work in preventive medicine if we take better care of these cases. Very few of our children are seen by the obstetrician; they are usually seen by the general man.

DR. A. B. STEWART, Raton, N. M.: Relative to the effect of heart disease in childhood, the greatest authority apparently on this subject today is Dr. Still of London, and his method of treatment is relatively simple. In childhood the use of salicylates is imperative, the same as mercury in syphilis. He has recently completed a new book which is most interesting and instructive on this subject.

DR. J. R. LEMMON, Amarillo, Texas: I have certainly enjoyed Dr. Wylder's paper very much and came all the way from Amarillo to hear it. I am ready to put my shoulder behind the wheel and help with this business of preventive medicine. I think doctors as a whole, especially general practitioners, are not enough sold on the idea of preventive medicine, and the sooner we are sold on this important part of medicine, the sooner we are going to be able to attain results and satisfy the laity.

In regard to the Dick theory, I have been an enthusiastic user of toxin and antitoxin for sometime. I have a little place on my history charts and always try to sell this to the people along with whooping cough vaccines. My experience with that has been that it will immunize people in 40 per cent of cases; in therapeutic measures I think it will 100 per cent. I have a hard job usually in getting patients to come back after a Schick test. I keep a list on my desk and have to keep checking them up. Most of them are very dilatory about coming in. The question of tonsillectomy in cases of chorea is almost universal. I believe unquestionably tonsillectomy will aid the average choreic child and that saline is still the preparation of choice.

DR. WYLDER (closing): I want to thank you for giving my paper such generous discussion. I am glad the question of "blind mastoid" was brought up. That is something we could spend an afternoon on. In any unexplained diarrhea cases, look at the mastoid and you may find the cause. If a child comes in with an unexplained diarrhea, if you will puncture the ear drum the diarrhea will clear up. Dr. Britton answered Dr. Vickers' questions in regard to tonsils and he can tell a great deal more about tonsils than I can. Still's works are certainly beautiful; he is a most interesting writer and I love to read all his books, but he does not advocate tonsillectomy as much as we do in this country. He has said the child should be sent to the seashore and on ocean trips before you take out the tonsils.

We are doing more and more in preventive medicine with the periodical physical examination and now we advise mothers to bring the babies in every month in order to supervise their diet and look them over and if we could only educate the American public to these things a great many upsets could be avoided.

I use toxin antitoxin because it came out first and the results are satisfactory. In regard to getting them to come in for the Schick test, I have had the same experience as Dr. Lemmon. My office assistant keeps a record and if they do not come in, writes them a letter to see if the child has developed immunity or not, and a great many of them will respond. However, a great many mothers will not have their children immunized for diphtheria; they do not have them vaccinated for small pox until they find they have to have a certificate for them to attend school. I think as near as I can tell about 15 per cent of the mothers I talk to about the advantages of diphtheria immunization bring their babies in for it. I believe, however, as the public becomes more and more educated, we will have better results.

## SOME UROLOGICAL PROBLEMS OF INTEREST TO THE GENERAL PRACTITIONER

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(Read before the New Mexico Medical Society, at its Forty-eighth Annual Meeting, Raton, N. M., June 4, 5, 6, 1930.)

Diseases of the urinary tract are of interest to all physicians because of their direct and remote connection with the problems involved in all specialties. The general practitioner, however, shoulders the greatest responsibility, for it is his services which are sought by the patient at the onset of symptoms when the pathological lesion is in its incipient or early stage of development. In no other branch of medicine is the immediate recognition of symptoms, the accurate determination of their causes, and an early therapeutic attack of greater importance. It is encumbant upon all of us to be alert on all subjects, and profitable for all of us to consider frequently the meaning and significance of the outstanding urological symptoms.

### HEMATURIA

I am prompted to discuss the subject of hematuria first, because it is a symptom which is, in about eighty per cent of cases, due to a serious pathological condition. Yet our records show that the average case does not receive a thorough study until this symptom has existed on an average of over six months, the actual time varying from one day to twenty years. This is all the more regrettable, particularly in cases of tumor, because at the manifestation of first symptoms, the disease has already progressed to an advanced stage.

The list of diseases to be thought of and considered when blood is found in the urine is long and varied. It includes lesions of both the upper and lower urinary tract as well as certain constitutional diseases and conditions entirely remote from the kidney. The lesions involving the upper urinary tract include tumors, calculi, tuberculosis, nephritis, pyelonephritis, hydronephrosis, ureteral stricture and bilharzia. In hematuria originating from the lower urinary tract the causes may be neoplasm, polypi, papilloma, caruncles, cancer, calculi, acute and chronic infections, ulcers, diverticuli, prostatic adenomas and carcinomas, seminal vesiculitis, and lesions in the urethra, such as infections, polypi, etc. Hematuria is also found secondary to systemic disturbances, such as hemophilia, purpura, scurvy, leukemia, infections, as appendicitis, secondary to the administration of insulin, toxins from dyes, etc.

This is an incomplete list of the diseases causing hematuria. While there are many causes, and it is necessary to think of them all, yet it is important to know that only three out of the many,—namely tumors, stone and tuberculosis are the existing causes in eighty per cent of all cases. Authors differ in the relative place in terms of frequency occupied by these three diseases. Tumors happen to take first place as the most frequent cause in my experience. It is to be remembered, however, that in eight out of ten cases consulting us for blood in the urine, the cause is a serious one and immediate action is necessary for its cure. It is disheartening to encounter cases particularly with inoperable malignant growths who give a definite history of hematuria from six months to a year with no effort having been made to determine the cause of the bleeding. On the contrary, it is a pleasure to encounter these cases at the onset of symptoms, find the small tumor, remove it by any one of the approved methods and enjoy the sensation of having saved a life from terrible suffering and an untimely death. Hematuria is the one urological symptom which should never be disregarded. Neither the patient nor the physician should be content until a positive explanation of its cause is known. The cause should never be guessed at. It is almost criminal to defer investigation, call it a strain, prescribe hexamethylenamine and await developments. The batting average of its being due to a serious cause in eighty per cent of cases is too great an odd against us.

I will not attempt to discuss fully the technique of the procedure of study in these cases. It includes macroscopic, microscopic and bacteriological examination of urine voided in the three glass test, a thorough physical examination, cystoscopic examination with pyelograms, comparative function tests, etc. While in most cases the location and cause of bleeding can be easily and positively determined, in others prolonged and detailed study is necessary. The very best time to make such a study is when the bleeding is active. There is great danger of error even after a thorough urological examination has been made. This is perhaps due to an inclination to pass judgment on a fogged or poor x-ray plate or rely upon one segregative function test or one bacteriological examination when experience proves that it frequently requires many efforts before the exciting cause is definitely found. Perhaps the tendency to do this is greater in urology than in some other branches because of the discomfort caused the patient



in obtaining specimens or making the pyelograms.

### PAIN

Let us next consider the subject of pain, its causes and symptoms. Pain as a symptom in diseases of the urinary tract is, in many cases, very misleading and because of this responsible for many errors. It may vary from an intense colicky pain to a simple soreness or be entirely absent (even in serious lesions). When it is severe it is demanding and impels the patient to seek immediate medical aid. Unfortunately the lesions which cause the severest pain are the least imperative so far as the need for radical removal is concerned. The passage of a calculus causes perhaps the greatest pain yet such a case seldom demands an emergency operation. The more serious lesions, as tuberculosis, neoplasm, etc., may develop insidiously for months to years with an entire absence of pain. In fact, the first intimation the patient may have of the existence of such a lesion is hematuria, and the first pain caused by the passage of a blood clot down the ureter. This is most unfortunate because both of these diseases demand early radical removal if the patient's health and life are to be conserved. A small and innocent hydronephrosis may be accompanied by severe colicky pain which drives the patient to seek immediate assistance while a large hydronephrosis, so large as to cause pressure atrophy of the secreting kidney cells may exist for months with no pain. Not only does the type and severity of the pain vary greatly but its location is more apt to be remote from the urological organs than it is to be specifically associated with them. The ache in the lumbar region usually interpreted as a sign of kidney trouble has led to many diagnostic errors and is responsible for much self administered medication. On the other hand the absence of any such pain has allayed anxiety concerning the kidneys when in reality they were badly diseased and treatment was urgently and definitely indicated. It has been my experience that major kidney diseases are accompanied by pain referred to remote parts and simulate diseases of other organs, particularly the abdominal viscera, more often than to the so-called kidney area in the lumbar region. Conversely, diseases in other organs do cause pain which is referred to areas ordinarily interpreted as indicating lesions of the urinary organs. Pain in the lumbar region is more often caused by osteoarthritis than by lesions of the kidney and similarly some cases of pain in the perineum and urethra are caused by lesions of the sacral bones.

Lesions of the kidney may exist with negative urinary findings and yet be responsible for pain in remote areas as a hypernephroma with metastases in the skeletal bones. Because of these facts we cannot rely upon or place too much confidence upon any certain pain, or the absence of pain, when considering the urinary organs while making the invoice of our patient's disability. It is comforting to know, however, that it can be proven whether or not any given pain is of urological origin. The distention of the renal pelvis and ureter with pyelographic media in making routine examinations will, as a rule, reproduce the patient's pain and thus implicate the kidney as a source of that pain or serve as a strong evidence absolving the kidney in case the pain is not reproduced. In view of these facts it should be our rule to study the urinary organs in the presence of any pain, the cause of which cannot otherwise be positively proven.

### DYSFUNCTIONS OF URINATION

Frequency, urgency, dribbling and all other phases of unnatural function of voiding, are more or less definite and indicate some involvement of the lower urinary tract. There is very little danger of being misled by these symptoms because their indications are direct and specific. It is to be remembered, however, that we may have very serious lesions involving the bladder, or prostate gland without any symptoms of dysfunction of urination. The most frequent of such conditions are tumors in the bladder, such as papilloma and even carcinoma. The so-called quiet prostatic hypertrophy with marked bladder distention and even carcinoma of the prostate. The routine examination of the urine showing blood, pus, or albumen, should furnish a clue which leads to the discovery of these conditions, for all such pathological elements found in the routine urine examinations indicate the need of a thorough cystoscopic study. It is to be remembered that the absence of these elements found in any single examination of a specimen of urine is not to be taken as evidence absolving the urinary organs of all pathological lesions. Frequently a complete negative urinary report may be rendered by the laboratory in cases of tumors of the kidney, or bladder, carcinoma of the prostate and even in calculi. It is not a rare experience to encounter such conditions of negative urinary findings with an absence of specific symptoms the patient reporting for examination because of general debility and the presence of these lesions only discovered by routine examination and these often repeated when the case was not satisfactor-

ily explained by the first effort. Experience has taught us the value of repeating the routine examinations of urine at regular frequent intervals—for pus, blood and albumen may show in some specimens and be absent from others.

#### PROSTATIC PROBLEMS

One of the outstanding urological problems with which we are confronted daily is that of the prostate gland. There are a few phases of this problem which I desire to emphasize. Its prevalence is not fully appreciated. Twelve per cent of all men past middle life develop some phase of prostatic obstruction. Many more men of all ages suffer from the direct and remote effects of follicular prostatic infections. We will discuss only the obstructing lesions. It has been a common practice to accept prostatic hypertrophy as an element of fate. Patients have been told that such trouble sare coincident to old age and something which they must accept and patiently endure. They have been taught to bear the discomfort caused by the obstruction as long as they can before resorting to radical measures for relief. I believe this to be a bad policy. The gradually increasing nocturia, starting with once a night and increasing to five or more times, is very disturbing to restful and restoring sleep. The back pressure of the progressively increasing amount of residual urine seriously interferes with kidney function and urinary retention products increase in the blood. These are toxic. They produce all the signs and conditions of senility, chief of which is increased blood pressure with renal, arterial and myocardial degeneration. Infections are bound to develop in the stagnant urine, stones are apt to form, the bladder wall become thickened and trabeculated, and diverticuli form and gradually enlarge. The longer the obstruction exists, the more pronounced these complications become so that by the time the symptoms are unendurable not only the urinary organs but other vital organs, especially those of the circulatory system, have become permanently and irreparably damaged. Such an advanced pathological state greatly increases the mortality rate and even worse, makes impossible normal functioning organs even in those who survive the extra hazard of the operation. This picture of delayed action in cases of prostatic enlargement becomes all the blacker when we consider that eventually twenty per cent of them become malignant. The increasing number of these cancer cases applying to the urological clinics today is appalling. While most of these are malignant from the start there are others which develop in

the advanced adenomas. Not only all of this later type, but all of the above mentioned complications could be prevented if the obstructing prostate were removed early.

Consider the advantages of early removal. The patient is usually a good surgical risk, the operation can be done in one stage, the average hospital confinement is eighteen days, there are rarely any complications, and the patient is rewarded with normally functioning results. Contrast this with delayed action. The greater hazard, with the higher surgical mortality rate, a two stage operation with a much longer period of hospitalization, the greater tendency to serious post-operative complications and the unsatisfactory functional results following.

In a consideration of these facts I am sure justice will demand that we advise our patients to attack with radical measure their prostatic problems at an early age. It is better to do this when they can than to wait until they are forced to.

I believe that urologists are making a great contribution to race betterment by conserving the health and vigor and by extending the days of active service of many old men whose advanced age has enabled them to accumulate knowledge and develop wisdom. Every patient complaining of nocturia, with hesitancy, diminished stream, or urgency, should have a careful examination. All such cases are not due to true hypertrophy. Many of them are simply congested glands which, if not relieved, become infected and definite hyperplasia develops. Simple bar obstruction is responsible for these symptoms in many cases. This condition is now simply, safely, and efficiently removed by the cautery punch technique. By this method, applied early, many more serious operations, which later become necessary, may be prevented.

The cancer phase of this prostatic problem is worthy of more detailed discussion. I can only invite your attention to the large incidence of this condition and urge that it be thought of in connection with the physical invoice of every man past forty-five. Let me explain that many of these cases are well advanced before any clinical symptom develops. It is not unusual to encounter patients whose only symptoms are caused by metastatic growths in the bones and who have no symptoms of dysfunction of urination and no abnormal findings in the urine. This is the treacherous phase of this problem. Cancer of the prostate may insidiously develop into an advanced stage without producing any local symptoms. In the majority of cases it can be detected by rectal palpation. It is



characterized by a flatness and definite hardness. It is more or less fixed and has an indefinite border outline and at times distinct, localized indurated areas. There are cases in which the malignancy develops in the center of an adenomatous gland. These cannot be detected in their early stage by any method of examination, which is a big argument in favor of the early removal of all adenomatous glands. While malignancy of the prostate may exist even with the entire absence of any disturbing symptoms, in contrast to this we may have marked disturbance, as nocturia, dysuria, frequency, urgency, pain, priapism, etc., when the prostate may feel very small, no marked induration detectable, and there is practically no residual urine, the symptoms being all out of proportion to our examination findings. Here, again, the final answer is to be had only by repeated observations and study. Palpation of the prostate through the rectum ought to be made a part of every general examination.

#### TUBERCULOSIS

We will not attempt an extensive discussion of urinary tuberculosis. The big problem with this, as in all of the others to be emphasized, is an early diagnosis. Fortunately renal tuberculosis is usually unilateral at first. Tuberculous lesions of the kidney may develop very insidiously and continue until the kidney is extensively involved before any outstanding symptoms become manifest. We must bear this disease in mind in every case presenting symptoms of frequency, urgency and burning, particularly when such symptoms are accompanied by a few pus cells in the urine that is sterile to culture. After hematuria and the aggravating bladder symptoms develop the lesion is apt to have become very extensive, involving the ureter, bladder and sometimes the other kidney, making the securing of perfect therapeutic end results impossible. One must remember the great difficulty in finding the Koch bacillus in the urine as well as to demonstrate a lesion in all early cases by any and all of the urological methods. Negative findings in a suspicious case should never quiet our suspicions. Repeated efforts will reward us, by ultimately proving our contentions if the lesion actually exists. It is easy to establish a diagnosis with urological methods in advanced cases by pyelography, comparative function tests and bacteriological studies. One can make quite an accurate and dependable diagnosis by such methods even when the positive evidence of actually finding the tubercle bacilli is absent.

#### SUBMUCOUS ULCER

Let me invite your attention to one other urological problem which is quite common and very frequently unrecognized. **Submucous ulcers of the bladder** sometimes known as "elusive ulcer of Hunner" is not an uncommon condition. It is quite largely confined to women and occurs in mid life. The outstanding symptom is frequency, varying from a few minutes to an hour or so. It is practically the same day and night. There is marked urgency with a contracted bladder having a capacity of only one or two ounces. The bladder is very painful when full, in fact sufficiently so to demand immediate emptying and this oftentimes leads to incontinence. There is little variation of symptoms from day to day.

Unfortunately for the victim of this affliction, there are few coexisting signs or findings and the symptoms are all out of proportion to any demonstrable pathological lesions. There may be no abnormal constituents in the urine, such as pus, blood, albumin, etc., and it may even be negative to bacteriological culture. The x-ray findings and kidney function tests may also be normal and yet the symptoms are outstanding and always present. The woman is usually nervous and because of this and the negative findings she receives a diagnosis of a "nervous bladder." In these cases it is usually the bladder disability that makes the woman nervous and not the nervous woman that makes the irritable bladder. It is even sometimes difficult to make a diagnosis in such cases by a careful cystoscopic examination. The ulcers are not always visible. For this reason they have been called "elusive ulcers." Repeated efforts, however, are rewarded by findings of a localized reddened area with an irregular margin from which small distended vessels may be seen radiating out for a few millimeters. These cases can be relieved by the elimination of all focal points of infection, proper hygiene, particularly colon hygiene, along with over distension of the bladder under gas anaesthesia or fulguration of the ulcer. I find it profitable to keep these patients in bed for a week after the fulguration, with an indwelling catheter for drainage and the injection daily of one ounce of one per cent mercurochrome.

#### RESIDUAL URINE

The last urological problem I wish to discuss is that of residual urine,—its causes and effects. Residual urine, meaning the amount left in the bladder following micturition—when an effort was made to completely empty—may vary from one dram to sixty or more ounces and exist without attracting

serious attention to the bladder. Symptoms when present are not always in keeping with the amount of residual. A small quantity may be the cause of active symptoms; a large amount may be present without direct symptoms. Numbering among the conditions interfering with complete emptying of the bladder may be, obstructions at the bladder neck, such as enlargements of the prostate due to infections, hypertrophy and tumors, seminal vesiculitis, obstructions in the urethra, as calculi, strictures, polypi, papillomas, and atonic bladders secondary to a disturbance of the central circulatory nervous system such as tabes, syphilis, malformations, spina bifida, etc. Again this is not a complete list but it is given merely to show that when residual urine is demonstrated one should not attempt to explain its cause without making a thorough investigation. I wish to emphasize the importance and value of making routine efforts to determine the degree with which the bladder empties itself, as a part of all urological examinations. The technique is so simple and devoid of danger when the proper method is followed. Catheterization should be carefully and aseptically done immediately after voiding. The patient must be instructed to completely empty the bladder. The amount obtained should be collected in a sterile container in order to provide material for bacteriological study. After draining the residual the injection of one ounce of a five per cent solution of argyrol into the bladder serves two very useful purposes, prophylaxis against infection, and to determine the ability of the bladder to empty itself. The argyrol should be totally eliminated at the first micturation. The number of times it is manifest in after voidings presents positive evidence not only of residual but is an index to the degree of emptying. It further serves as a means of impressing the patient with the facts involved. There are two very important precautions which must be emphasized, a rigid aseptic technique, and never to drain off over eight ounces from a bladder retaining more than that amount. The cause of a given case of residual urine can usually be determined by simple bladder cystoscopy. Evidence of an obstructing prostate, diverticuli, incompetent orifices, etc., can as a rule be easily detected. There are cases though when the causes cannot be seen through the cystoscope. In such cases a cystogram offers great aid not only in presenting the evidence,

or demonstrating the cause, but definitely determining the degree or extent of the lesion. Particularly is this true in incompetent ureteral orifices, small diverticula, etc. A plain plate should always be made before the injection of the opaque media in order to determine any orthopedic lesion of the lower spine, or any calculi in the urinary tract, should they exist. Thorough physical and neurological examinations are just as necessary in all of these cases as in any other obscure condition and by it the underlying cause of the patient's urinary symptoms can frequently be determined. The systemic effect produced by residual urine varies with the cause producing it. There seems to be more reflex effect upon the kidney function when an obstructing prostate is the cause. A much larger amount of residual urine caused by a diverticulum of the bladder may give rise to much less disturbance than an equal or less amount produced by an obstructing prostate. The most serious effect of residual urine is its predisposing factor to infection and to the formation of calculi. Any bladder which cannot empty itself at each micturation is quite prone to infection and stone. We serve the best interest of our patients by avoiding these complications which can easily be accomplished by discovering and eliminating the cause of the residual urine before any of these complications develop. It is to be remembered that the title of this paper is "Some urological problems" and this is not to be considered a discussion of all the urological problems of interest to general practitioners.

#### CONCLUSIONS

1. In conclusion, let me emphasize the importance of giving the urinary tract a thorough study when making the annual physical examinations of our patients.
2. To make such a study includes more than the simple examination of the urine, and palpation of the organs.
3. Symptoms are very unreliable and may be misleading and are not to be depended upon for a diagnosis.
4. While certain symptoms may be difficult to explain, the answer may be had by persistent and painstaking efforts.
5. Impending trouble discovered before it becomes imperative is more conservatively and successfully dealt with, than to wait until the condition becomes demanding.
6. One should always think of the urinary tract as a possible source of any pain which cannot be otherwise positively explained.



## FACTORS OF SAFETY IN THYROID SURGERY

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It is not probable that the very large increase in surgical operations on the thyroid gland, during the recent past represents an actual increase in the incidence of goitrous disease. Rather, it is to be interpreted as indicative of the rapid increment which has taken place with reference to surgery in general. True, surgical attack upon the thyroid is far more frequent now than formerly, but so is surgical attack upon every other organ and portion of the body. And this surgical-mindedness has been and is accompanied by conspicuous hazards and penalties. Instead of the decrease in mortality which would naturally be expected to attend larger experience, quite the reverse has occurred, because, undoubtedly, the experience has been distributed among such an increased number of different operators.

The mortality rate of all surgery is higher today than at any time within the past quarter of a century. This is notably true of thyroid surgery. Two decades ago it was generally accepted that this constituted a highly specialized field which only a relatively few cared to invade. As a result the mortality rate in the hands of those few steadily dropped from ten per cent to one per cent or less. Today, taken in the aggregate, it is again at or above ten per cent.

These are not pleasant thoughts. If true, they should give us serious pause. Surgery and the surgeon exist for the patient, not the patient for surgery and the surgeon. When this idea is fully assimilated one of the chief grounds of the criticism and censure from which our profession is suffering at the present time will be effectually removed.

One other preliminary observation. Anatomy is and must continue to be the essential basis of successful surgery. Intimate, exact, comprehensive knowledge of the regional anatomy of the neck is a fundamental requisite if these patients are to have a square deal at our hands. To remove a goiter is one thing. To remove it—just the amount it should be removed—without danger or damage to important contiguous structures is quite another story.

The factors which make for safety in thyroid surgery constitute a very large subject. Mention will be made here of only a few of them which seem of outstanding importance.

## STUDY OF THE CASE

Undoubtedly this is the chief desideratum in these cases. The vital question is not to determine the presence of a goiter. Usually this is sufficiently obvious at first glance. What we seek first to know,—what the safety, always, and often the life of the patient depend upon,—are the history of the case, the care and completeness with which it is elicited and digested, and the thoroughness with which the physical examination is made. To be of real value all of these must include the patient as well as the goiter. What is the condition of the patient's general health? To what extent have the heart and other vital organs been impaired? What is the present degree of toxicity as indicated by a reliable basal metabolism test? Has the patient been taking iodine, and, if so, in what form and dosage, when and how long? Does the goiter cause pressure symptoms? Is it embarrassing by reason of its size? Is it definitely or probably substernal? Will the case be best handled by surgical intervention? If so, what length and what kind of preparatory treatment will be necessary? And so forth. These and many other questions of the utmost importance arise in every case. Until we have placed ourselves in position to answer them, all of them, in each instance we are not in position to justify the confidence patients repose in us when they seek our aid.

## PREPARATION OF THE PATIENT

I do not hesitate to say that in the majority of cases the preparation of the patient is fully as important as the operation itself. Possibly more so, because the mechanical steps of a given surgical procedure may, by repetition, become largely matters of simple routine, while the subtle considerations involved in selecting the most favorable time for operation must be determined separately in every individual patient. Surgical judgment, that intangible factor which is so essential to successful surgery, plays a more vital part in preparing the patient and choosing the time to operate than does dextrous handling of scalpel and sutures.

One point in this connection should be especially emphasized, namely, that the time spent in preparatory treatment is not often wasted. Generally speaking, there is nothing to be gained by haste. Far better delay a few days longer than absolutely necessary than to hurry into operation even a single day before the most propitious time has arrived.

Every surgeon who handles these cases at all frequently is likely, rather early in his experience, to adopt certain rules to guide him in deciding when it is safe to op-

erate. Of course I mean principles rather than inflexible rules. Personally, I confess to a decided reluctance to proceed with the operation until the basal metabolism reading has been reduced below plus fifty and the pulse rate below one hundred. To bring about these favorable conditions sometimes requires much patience on the part of all concerned; but the time so spent is seldom a real loss and the added sense of security more than compensates for the delay.

#### CHOICE OF ANESTHETIC

Much of the foregoing consists of generalities. Such propositions as "study of the patient" can not be reduced to definite formula. Individualization in each and every case is the only means by which the patient's welfare may be effectually safeguarded.

Choice of anesthetic is a question that permits and invites a more concrete discussion. And there is much that should be said upon the subject, for the outcome of the operation is always at stake, and especially so in hyperthyroid cases.

In general terms we may say that two very different types of cases are encountered, the simple or non-toxic, and the hyperthyroid or toxic cases. In the former, my personal preference is local anesthesia alone, and I find myself employing it to a constantly increasing extent. It is true that the method makes many exacting demands in technic and finesse; but there is a degree of satisfaction attending its use which far overbalances any incidental difficulty or disadvantage.

The conditions are radically different in the toxic cases. Here the extreme mental alertness and the keyed-up emotional state render the patient peculiarly susceptible to the evil effects of external stimuli of every kind. Mere contemplation of the approaching ordeal is sufficient to cause grave disturbance, which the sights and sounds of the operating room serve to exaggerate tremendously. There can be no doubt that the danger and the mortality rate are definitely increased by these factors.

It admits of no question that the ideal way to manage the hyperthyroid case is to protect the patient from these untoward influences by every means in our power. Crile recognized this truth years ago and his so-called anoci-association method was the outcome. Careful observation of the details of this method renders it possible literally to "steal the goiter." Unfortunately, few hospitals afford the necessary facilities for carrying out this ingenious plan and most of us can take advantage of it only by resorting

to expedients which in reality are merely makeshifts.

The introduction of the new drug, sodium amytal, has done much to improve the situation and make it possible for all of us to utilize the principles involved in the Crile method. By the proper use of this agent patients may be tided over the entire operative procedure with a minimum of disturbance and without inducing harmful reactions of any kind.

Sodium amytal is a hypnotic. Within the limits of safe dosage it is not an anesthetic nor an analgesic. This fact should be kept constantly in mind. The only evil effects reported which could fairly be attributed to the remedy—and the cases are surprisingly few in number—have occurred in instances where injudicious doses were employed.

The drug is given intravenously only. The amount required varies from seven to fifteen grains. It acts with remarkable promptness, the patient falling into a profound and apparently natural sleep while it is being administered. This is the indication that enough has been given. Nothing more than a state of unconsciousness should be expected or sought. The sleeping patient may be transported to the operating room, the supplementary anesthetic, local or general, started and the operation completed without the patient knowing that anything has occurred until she awakens in her accustomed surroundings some hours later and inquires what it is all about.

My experience with the method described embraces some twelve or fifteen cases, all within the past nine months, in none of which were observed any alarming or even disquieting effects properly chargeable to the sodium amytal. After a moderate temporary fall the blood pressure remains unchanged and the pulse rarely rises more than ten beats throughout the entire operation.

I am impressed that as a rule it is better to supplement the sodium amytal with general than with local anesthesia. Much less of the nitrous oxide or ethylene will be found necessary. Ether I do not advocate for this or any other purpose when a competent anesthetist is available. The objection to local anesthesia as an auxiliary is based on the fact that the cooperation of the sleeping patient can not be enlisted and, unless the surgeon is especially skilled in the technic of the local method, disconcerting reflex movements and restlessness on the part of the patient are apt to occasion both delay and embarrassment.

Finally, in this connection let me strongly recommend that the administration of



this new agent be invariably in the hands of a trained anesthetist. Properly considered it is not a part of the surgeon's job. Personally, I should no more think of resorting to it without the services of the anesthetist than of undertaking a thyroidectomy without an adequate supply of artery forceps.

#### THE OPERATION ITSELF

As suggested in my introductory remarks, thyroidectomy is not a simple operation. A surgeon friend said to me only a few days ago that he could not understand why any sane man would choose to specialize in this field; that the numerous problems involved were too serious and intricate for comfort; and that he much preferred, both for his own sake and for the patient's to remove a gallbladder, or an appendix, or a uterus, because when he was through with one of these procedures he could be sure that it was finished and that he had done only the correct things. A vast amount of important truth underlies those frank observations. To know what and how much to remove in a thyroidectomy are questions no more weighty in their import than to know what and how much not to remove.

Lest I be charged with presumption, I shall not enter into discussion of the details of surgical technic. Instead, let me conclude by simply mentioning a few salient points:

1. Operation on the thyroid gland should always be approached with a keen sense of responsibility and a full appreciation of every tissue and structure in the neck, realizing that it is as important to conserve certain of them as it is to attack certain others.
2. Gentleness of manipulation is peculiarly essential in this work. The amount of traumatism inflicted is always reflected in the patient's condition both during and at the termination of the operation.
3. Speed but not haste is highly desirable. Excessive time consumed in an operation is also apparent in the patient's condition when the ordeal is over.
4. Hemostasis should be complete at all stages of the operation. Undue loss of blood adds danger and days to the convalescence.
5. I am firmly convinced that, with rare exceptions, provision for drainage should be made in these cases. When it is omitted there is apt to be considerable rise of temperature during the first week and the wound will often have to be opened for this purpose.
6. There is no operation in the entire range of surgery which is attended by such speedy and spectacular benefit to the patient. This is often noticeable from the first day in the tempered heart action and more

tranquil facial expression. More than this, it is not infrequently as truly a life saving procedure as the removal of a gangrenous appendix.

### AN ATYPICAL CASE OF NEUROSYPHILIS WITH NEGATIVE SEROLOGY.

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F. C., male, Mexican, age 23, married, employed by Apache Powder Co. during the past 11 years, was referred to me by the company, June 24, 1930, because of difficulty in walking.

Family history. Father died at 47 years of unknown cause, after a febrile illness of several weeks duration; had always been healthy, was not given to the excessive use of alcohol. Mother living and well, aged 45, resides in Sonora, Mexico. No history of alcoholism, epilepsy or other nervous or any mental disease in family. Wife and one child, aged two years, living and well. One child died of unknown cause when 25 hours old. Wife has not had any miscarriages.

Personal history. Born in Old Mexico. Patient insists he has never had any of the acute infections of childhood, and that he has never had any serious illness, operation or injury. Except for a rare headache or a "cold" of a day or two's duration has never been ill and, in the more than 11 years employed by the company, he never consulted the company physician until the onset of present illness, June 24, 1930. Patient denies venereal disease; states he has never used alcohol to the point of intoxication and never regularly. Denies the use of narcotics or hypnotics or any drug at any time.

Present illness. Patient insists the onset was sudden, that he never noted any difficulty in walking until June 23, 1930, the day before he reported to the company physician, but reliable witnesses who have known patient for years, state they have noted a peculiarity in his gait becoming gradually more marked over a period of one and a half to two years. Patient's chief complaint was difficulty in walking interfering with the performance of his usual work, a difficulty which he insisted was due not to weakness but to lack of co-ordination of his limbs. Patient says, he has, and has had, no headaches, diplopia, dizziness, palpitation, dyspnea, dysphagia, jaundice, tinnitus, otitis, tonsillitis or sinus disease, no cough, expectoration, hemoptysis or pluerisy, no abdominal pain or tenderness, no diarrheal diseases. Appetite and digestion good. Bowels regular; vision normal; hearing unimpaired; no urinary disturbance; no edema.

There is a negative history suggesting syphilis, possibly hereditary.

Physical examination. Patient is a fairly well developed, moderately well nourished, adult, male Mexican. Mucosa appears somewhat pale. Skin shows scattered areas of vitiligo, varying in size, over entire body, which he says he has had as long as he can remember. There are no trophic changes in the skin and no scars suggestive of a healed primary lesion, no pigmentation suggesting healed secondary eruption, no mucous patches.

There is no general adenopathy; thyroid is not enlarged; there is no abnormal sweating, no tache or other evidence of pathology of the ductless glands or of the vegetative nervous system. Heart and lungs appear normal. There is no arteriosclerosis. Blood pressure is systolic, 94-100; diastolic, 60-64. Genito-urinary system, negative. Repeated urinaly-

sis shows amount normal; urine amber, clear; acidity normal; sp. gr., 1014 to 1022; no albumin; no sugar; no acetone; no casts or cylindroids. Gastro-intestinal tract negative; no masses; no scars, liver and spleen not palatable. Extremities normal; no flat-foot, no deformities, no muscular atrophy or hypertrophy; mobility of all joints unimpaired.

Neurologic examination. Cranial Nerves No. 1: No evidence of disturbance of sense of smell. No. 2: Vision unimpaired, fields normal, no hemianopsia; Fundi and retinae normal; no lesions of blood vessels; nerve head distinct in outline, appears normal. Nos. 3, 4 and 6: No ptosis; ocular movements good in all directions; no squint; no nystagmus; pupils equal, round, contracted, react perfectly to accommodation but very sluggishly to light, and only to the very brightest, most concentrated light at all; to the light of a flashlight or ophthalmoscope no reaction occurs. No. 5: No disturbance of sensation of face; masseters and temporals contract normally and equally. No. 7: Face symmetrical; no impairment of motility except that the left side of mouth is drawn a little farther outward when showing teeth with jaws together. No. 8: Hearing unimpaired; no tinnitus or vertigo; fork tests normal. Nos. 9 and 10: Swallowing not impaired; palate moves evenly; sense of taste unimpaired; vocal cords show no pathology, their function unimpaired. No. 11: Sterno-mastoids and trapezii contract strongly and equally. No. 12: No atrophy of tongue, no tremor; tongue protrudes centrally and evenly.

Motor System. Station decidedly impaired, tends to stand upon a wide base with feet apart. Romberg markedly positive. Standing on one foot with eyes open, shows marked impairment of equilibrium. Patient walks with feet wide apart, with very definite uncertainty, constantly looking down at his feet; turns quickly and with difficulty—a very typical ataxia. There is no tendency to fall in any particular direction, no propulsion or retropulsion. No tremor, no athetosis, no twitching or rhythmic movements. No loss of power in any group of muscles. Coordination markedly impaired in arms and hands, as well as feet and legs, by all usual tests. Incoordination in heel-to-knee tests, more marked on right side. No adiadokokinesis.

Knee jerks diminished when first seen, later apparently equal and adequate. Jaw, palatal, abdominal, cremasteric and plantar reflexes present. Biceps, triceps and radius reflexes absent. Achilles reflexes present and equal. There is no clonus, Babinski, Gordon or Oppenheim. Micturition and defecation unimpaired.

Sensory System. No subjective disturbances. No impairment of pain or temperature sense. Vibration sense appears to be less acute in left leg than in right. No tenderness of peripheral nerves. Position sense poor in both arms and legs. Pinching Achilles tendon produces normal pain. Patient differentiates between knife and pencil placed in his hand, with eyes closed, but is slightly astereognostic for coins, mistaking a silver dollar for a quarter in left hand, and a dollar for a half dollar in right hand.

Mental Examination. Essentially negative. Well oriented for time, place and people; insight good; general and special memory good for one who had only a few years in school; no illusions or delusion. No hallucinations (visual or auditory); response to ethical questions perfect. Patient rather introspective and appears to enjoy being examined by so many physicians and by so many methods.

Laboratory Findings. Blood and spinal fluid Wassermann and Kahn tests repeatedly negative at three laboratories. Colloidal gold curve normal. Spinal fluid not under pressure, cells 3 to 7;

Serum globulin, none at any test in any laboratory.

Blood shows 4,500,000 to 5,200,000 R. B. C.; hem. 55 per cent to 75 per cent; 6,500 to 7,800 W. B. C.; differential count normal.

Urine: lemon to amber, clear, acidity normal, no sugar, no acetone, no cases at many examinations.

X-ray shows no pathology of hip or pelvic joints, nor of the bones entering into these joints or of the long bones of the lower limbs.

Diagnosis: Neuro-syphilis, tabes dorsalis.

## DISCUSSION

The case presents the following points:

1. Ataxia of sensory type;
2. Marked Romberg;
3. Argyll Robertson pupil-reaction only to very brilliant light and that very sluggish;
4. Incoordination of arms and legs;
5. Absent deep reflexes in arms, diminished in legs (knee jerks);
6. Impaired position sense in arms and legs;
7. Slight astereognosis;
8. Spinal fluid and blood, negative.

The symptoms and neurological findings all point conclusively to a degenerative process in the posterior columns of the spinal cord (columns of Goll and Burdock) in a relatively early stage, with the finding of an early Argyll-Robertson pupil. These findings are those common to neurosyphilis of the tabetic type. The sudden onset claimed by the patient, but disproved by other observers, suggests the possibility of multiple sclerosis; but the absence of confirmatory evidence—especially the presence of abdominal reflexes, the absence of intention tremor, of speech disturbance and of nystagmus—makes this diagnosis untenable. The negative blood and spinal fluid appears to militate against neurosyphilis but it must be remembered that seven per cent of very definite tabetics studied by Kaplan were found to be serologically negative, and this case is apparently one of that seven per cent.

The question of etiology has been of especial interest in this case, in that the suggestion was made that, the man having been employed in the manufacture of explosives for more than eleven years, his symptoms might be the result of his constant exposure to sodium nitrate or the dust or fumes thereof. However, study of the effects of exposure to this chemical prove that, when it causes symptoms at all (which is extremely rare) it is a respiratory irritant, the symptoms being cough, expectoration and even hemoptysis, but in no case has it caused any damage to the central nervous system. Other employees of the Apache Powder Company exposed to sodium nitrate as long or longer than the patient, have never developed similar or any symptoms. Replies from the medical directors of E. I. duPont, deNe-



mours & Co., of Hercules Powder Co., are to the effect that in a very large experience covering many years in the manufacture of explosives, employing many men, no symptoms have been encountered which could be ascribed to exposure to sodium nitrate. The office of the Chief of Chemical Warfare Service, U. S. Army, reports no such symptoms have ever been reported from exposure to this substance (sodium nitrate) and the Library of the Surgeon General, U. S. Army, reports no cases of record in the literature of any symptoms referable to the central nervous system due to sodium nitrate. Therefore, the question of exposure to sodium nitrate as the cause of the symptoms which this case presents, can be dismissed as impossible.

The diagnosis stated above—neurosyphilis, *tabes dorsalis*—has been concurred in by Dr. E. A. Duncan, El Paso, Texas, and Dr. N. C. Bledsoe, Bisbee, Ariz., after careful study of the case and observation in hospital.

The case is of interest because of the definite clinical picture it presents in spite of the entire lack of serological confirmation.

#### TREATMENT

Patient has been on what in the past has been called "mixed treatment", mercury and iodides orally without notable effect as yet, except possibly some slight improvement in general condition, notably increase in percentage of hemoglobin. At present he is being intensively treated with intravenous neo-salvarsan and intramuscular injections of bismuth salicylate, gr. 2, per ampule.

#### PROGNOSIS

Guarded: the symptoms presented may become progressively worse in spite of the active treatment he is now receiving.

## DIAGNOSTIC OPEN FORUM

### I. CASE OF ORTHOPNEA

(No. 15351, Case Records of the Mass. Genl. Hosp., from N. E. J. of Med., Aug. 29, 1929, p. 424.)

#### Case Record

A Portuguese Negro from the Cape Verde Islands fifty-six years old entered January 30 complaining of orthopnea of ten days' duration. The history, brief as it is, had to be obtained by leading questions because of his orthopnea, discomfort, language difficulty and lack of intelligence.

For a month before admission he had had increasing dyspnea. Medicines given by his physician gave no relief. Ten days before admission he began to have cough with half a cupful of white frothy sputum a day. For a week he had had palpitation, a feeling of drowsiness, and anorexia due to epigastric pain and fullness whenever he ate or drank, and had not been able to lie down, but had slept in a chair. Once he vomited. For a week his urinary output had been small. Recently he had noticed a

tightness in his chest. The day of admission he noticed flecks of blood in the sputum.

He had always been strong. Like everyone else in the Cape Verde Islands, he had had many fevers lasting two or three days. He had been in Massachusetts for eighteen years. Thirteen years before admission he had a penile lesion that cleared up in a week. He denied all other symptoms of venereal disease. For seven months he had urinated once at night. His bowels were constipated.

Clinical examination showed a well nourished man, very dyspneic and orthopneic. Teeth bad. Marked pyorrhea. Apex impulse of the heart not seen or felt. Left border of dullness 10 centimeters from midsternum, 2 centimeters outside the mid-clavicular line, right border 3 centimeters, supra-cardiac dullness 5.5 centimeters. At the apex was a soft systolic murmur and a loud early diastolic; at the base a louder systolic and the same early diastolic heard also along the left border of the sternum. Rhythm regular. Sounds of good quality. Pulses normal. Artery walls palpable and tortuous. Blood pressure 140/50. An electrocardiogram showed normal rhythm, rate 100, rather low T waves. Expansion of the right lung greater than the left. Crepitant rales throughout the left lower lobe posteriorly. Liver dullness increased downward below the costal margin. Tender right upper quadrant. The patient resisted palpation here. There was a penile scar. Prostate large, tender, symmetrical. Edema of the legs to midleg.

Urine: 32 to 46 ounces, specific gravity 1.029 to 1.030, urine cloudy at all of three examinations, the slightest possible trace of albumin once, 2 to 3 leucocytes in one of three sediment examinations. Renal function 50 per cent. Blood: 17,900 to 11,700 leukocytes, 85 per cent polymorphonuclears, hemoglobin 80 per cent, reds 4,620,000, smear normal. Two Hinton and two Wassermann tests strongly positive.

Temperature 96.6° to 99.7°. Pulse 80 to 100, with a terminal increase to 128. Respirations 20 to 32, with a terminal increase to 43.

X-ray examination showed the size and shape of the heart shadow to be within normal limits. The aorta was not increased in its transverse diameter. It was a little wide across the auricle. There was rather coarse mottled dullness occupying the greater portion of both lung fields. The changes were more marked around the root and gradually faded out toward the periphery. They obscured the outline of the heart and the aorta. The diaphragm was visible on both sides. Its respiratory movements were limited. On the left the costophrenic sinus was distinct. The examination did not show any positive evidence of luetic aortitis or enlargement of the heart. There was probably some dilatation of the auricles.

Under digitalis the edema disappeared and for a few days the patient improved. February 5 and 6 he was very delirious and thought he was being killed. A psychiatrist thought the delirium was associated with the physical disease and might be transitory. February 6 the patient was very dyspneic all day. That night he suddenly died in a fit of anger.

#### DISCUSSION

#### DR. W. WARNER WATKINS

(Before Phoenix Clinical Club.)

I like the plan of a four step approach to a diagnosis. First on the basis of history of complaint and past history, to list the diagnostic possibilities; second, on the basis of physical and clinical findings, to eliminate some or add other possibilities; third, on the basis of the various laboratory findings,—clinical and x-ray,—to correct still fur-

ther the diagnostic suggestions; and fourth, to select the preferable diagnosis by deductive differentiation.

(1) This man's personal history suggests tropical disease or syphilis. His residence of 18 years in Massachusetts dims the possibility of tropical disease, but the penile lesion 13 years ago keeps syphilis in the forefront. The chief complaint was dyspnea, which can be caused by any condition which interferes with circulation and respiration. The dyspnea began at least a month before admission and for the past ten days has been severe (orthopnea). The possibilities in order of preference at this point, would be:—

Heart disease with decompensation, including aortitis and aneurism.

Lung disease, with or without emphysema or pneumothorax.

Pleural or pericardial effusion.

Newgrowth in mediastinum or lung.

Abdominal disease crowding on the chest.

(2) We make the physical examination and, to our surprise we do not find the heart much enlarged; we find pulses normal and regular, rate 80 to 100, pulse pressure slightly increased, a very suggestive heart murmur, diminished expansion of left lung and rales in lower left chest, edema of the legs, respirations 20 to 32, slight fever. The murmur is a soft systolic and loud diastolic, heard at apex and base and transmitted along sternum; liver dullness increased, tenderness in upper right quadrant, prostate enlarged and tender. These are paradoxical findings, and about all they do with positiveness is to rule out abdominal disease crowding on the chest sufficiently to produce the orthopnea. They still leave us with possible diagnoses.

Heart disease with decompensation, although with paradoxical findings for this.

Lung disease, including mediastinal or pulmonary newgrowths.

Pleural or pericardial effusions almost though not absolutely ruled out. Failure to feel the apex beat and limitation of expansion of left lung keep these within the field of possibilities.

We incline, very strongly, still, toward heart disease, and would require x-ray findings with regard to heart size, shape and muscular action, and the shadows in the lungs, with other laboratory data. In fact, we feel, at this point, that all the help we can get will be welcome.

(3) The laboratory gives us normal urine and normal blood counts except for leucocytosis. Two positive Wassermanns, on top of our definite history of penile lesion 13 years ago keep syphilis in the forefront. The x-ray of heart shows normal size and shape, without increase in aortic shadow but with some evidence of dilated auricles. There is a coarse mottling in the lung fields, occupying the greater portions of both sides, gradually shading off toward the periphery, but obscuring the heart and aortic outlines in the perihilar areas. This gives us something to think about. What do the laboratory data do to our diagnostic possibilities? They firmly fix syphilis into the diagnostic pattern. They rule out pleural and pericardial effusion. They throw grave doubt on the presence of cardiac decompensation as a cause of the dyspnea. They give us some lung lesions to be explained. In other words, they leave us two groups of lesions,—heart and lung,—to be considered, but with some new and troublesome diagnostic data to be woven into the differential pattern. We have now to answer the question, What can cause a marked dyspnea, with the diastolic murmur but without increase in size of heart, yet with circulatory obstruc-

tion and passive congestion in abdomen, and edema of legs, leucocytosis, and sudden death?

(4) We enter the fourth step of differentiation, stubbornly adhering to our predilection for heart disease, but feeling very shaky in the position.

A diastolic murmur ought to mean valve disease, and when heard at base, apex and along sternum, should mean aortic insufficiency, but we have nothing but the murmur, the dyspnea and passive congestion to support this. Without enlargement of the heart, without a Corrigan pulse, with sounds of good quality, rhythm regular pulses normal to feel, pulse pressure only slightly increased, with flat T waves in electrocardiogram, we cannot say decompensation, and if we do not have decompensation, we cannot explain the dyspnea on the basis of aortic incompetence. In the face of paradoxical findings like these, we would reject the diastolic murmur before we would the other findings.

If not aortic valve disease, what else can cause a diastolic murmur? Chronic mitral disease may give the Graham-Steele murmur at times. Could we have mitral stenosis which would keep the heart small, and an aortic disease which would attempt to make it large, and have them offset each other, so that we have a normal size heart? The auricular enlargement would be compatible with mitral disease. This is a fanciful diagnosis, and if we can find other explanation for the symptoms, we should not make it.

Yet, if we are going to diagnose valvular heart disease, we must do it in the face of physical findings not in accord with the pathology in question. We must either diagnose syphilitic disease of the aortic valve with hypertrophy and decompensation, in spite of physical and x-ray findings. Or we must diagnose some rarer heart lesion or combination of lesions, producing circulatory failure without ventricular enlargement,—at least of the left ventricle. Before deciding the question finally, let us consider the pulmonary causes of dyspnea.

If we can get over, under or around this diastolic murmur, we can explain the other symptoms by lung disease.

Miliary tuberculosis or other infectious process in the lungs, with or without emphysema would explain the dyspnea, the circulatory embarrassment. We have little support for this group, outside of the x-ray findings which would not be in accord with miliary tuberculosis.

I thoroughly agree that the x-ray findings must be subordinated to the clinical picture and not dominate it. Therefore, in the absence of fever, emaciation or other symptoms of miliary tuberculosis, I pass that by.

For pulmonary newgrowth, we have more basis. We have a coarse mottled dullness through both lung fields, more marked in the perihilar areas, where they obscure the outline of heart and aorta, and diaphragm is limited in mobility. We could not attach great importance to such lung shadows if we had a decompensating heart or circulatory stasis from heart disease, but if we do not have these, the lung shadows are important. Are they the shadows of newgrowth, and if so, are they primary or metastatic? They can be either, and by pressure could obstruct circulation through lungs or return flow from lower half of body.

One other possibility which would be in the same category as newgrowth suggests itself to me, and that is a syphilitic involvement of lung hilus, extending into lung tissues, and causing mechanical pressure on large vessels about the base of heart. Along with this we could have a slight degree of syphilitic involvement of aortic valve enough to cause the murmur. Or, conceivably, we might have



fibrotic changes which would so deform the structures as to give us a relative insufficiency of one or more valves.

I am going to pin my faith on my x-ray confrere, whoever he may be, and say, no cardiac enlargement, therefore no hypertrophy or decompensation; therefore the dyspnea was not due to valvular heart disease. The dyspnea and circulatory disturbances were due to lung disease, preferably carcinoma of the lungs,—whether metastatic or primary, we will not attempt to say. We believe there will be syphilitic aortitis, causing enough relative aortic incompetence to give us a murmur, with cardiac infarct as the immediate cause of death.

Furthermore, we are willing to bet four hits that this diagnosis is wrong.

#### DR. RICHARD C. CABOT

(In part, from journal mentioned.)

The history of the present illness all tends to make us think of a heart lesion back of it all, with passive congestion of the different parts of his body.

I suppose the fevers were malaria or unidentified types of infection.

Those percussion measurements are all within normal limits for an adult man. We have no proof so far of cardiac enlargement.

The essential thing in the blood pressure is the pulse pressure of 90, which of course is increased.

From the electrocardiogram, on the basis of a low T wave with nothing else, I do not think anyone would venture to say anything in particular.

The penile scar does not in the least prove that he had had syphilis. Ducrey's infection, chancroid, leaves scars more often than syphilis.

The urine is normal. The blood is essentially normal until we come to the Hinton and Wassermann tests.

It is rather surprising that x-ray showed the size and shape of the heart shadow within normal limits, because we have a diastolic murmur and presumably aortic regurgitation, and in most cases the ventricle is hypertrophied. I should not be surprised if it was hypertrophied here, and the heart does weigh more even if it has not stretched,—the concentric type of hypertensive heart with very little dilatation. Hypertrophy-and-dilatation usually is thought of as all one word. Now and then we find hypertrophy without dilatation.

We have no evidence of aneurysm from the x-ray.

The signs in the lung fields are presumably due to passive congestion, perhaps to bronchopneumonia. We cannot tell from the x-ray. Such changes around the root make you think of passive congestion.

I suppose the costophrenic sinus was indistinct on the other side, presumably from fluid.

I do not believe x-ray can make the diagnosis of luetic aortitis unless there is aneurysm.

The psychiatrist did not think the patient had any of the regular types of insanity.

#### DIFFERENTIAL DIAGNOSIS

What are the essential facts in this case? A man of fifty-six, a Negro, always well except for possible syphilitic infection,—we do not know about that—and for fevers which we cannot believe had any permanent effect upon him. He seems to have dyspnea, orthopnea, passive congestion; probably has heart disease. We listen to the heart and find a diastolic murmur and nothing else. That is enough to make a diagnosis of aortic regurgitation, especially when backed up by a large pulse pressure such as there is in this case. The rest of the physical examination shows positive Wasser-

mann and Hinton tests and passive congestion, probably shown in the liver, the lungs and the legs. The diagnosis is syphilitic heart disease and aortic insufficiency.

What symptom that he did not have here would you expect if it is infarct of the heart? He ought to have had pain. Dr. Mallory has shown us cases of coronary occlusion without pain, so that does not exclude occlusion of the mouth of the coronary arteries where the syphilitic process is. It may have been the cause of death. It does not seem to me that we have enough passive congestion to account for death. His legs were not much swollen and his lungs were only moderately congested.

Coronary occlusion is as good a suggestion as I can make as to the cause of death. I do not believe there was a brain lesion. There may be a terminal infection, bronchopneumonia most probably, which would account for the delirium and perhaps account for death. My diagnosis is syphilitic aortitis with aortic regurgitation; then possibly occlusion of the coronary arteries and sudden death from that cause, or very possibly bronchopneumonia and death from that cause.

#### DR. TRACY B. MALLORY

Anatomic Diagnosis: Syphilitic heart disease, syphilitic aortitis, bacterial endocarditis.

This man had syphilitic heart disease. The heart was hypertrophied somewhat, weighing over 500 grams. There was definite insufficiency of the aortic valve. There was also a terminal infection, which however was a somewhat surprising one in that it was bacterial endocarditis, which in my experience is relatively uncommon as a sequel of syphilitic heart disease. The majority of cases of subacute bacterial endocarditis infection show an antecedent rheumatic infection, although congenital lesions not infrequently are predisposing factors.

All the other organs were essentially negative. The aorta showed some evidence of syphilis, but nowhere enough dilatation to cause aneurysm. There was an anomaly of the liver, probably congenital, of no significance.

Dr. Cabot: One point of interest is that you can have a heart as big as this, 500 grams, and x-ray does not show it.

A Physician: Did you find anything to account for the sudden death?

Dr. Mallory: No, I did not, except that the acute bacterial endocarditis unquestionably played a considerable part in the picture, and the heart was probably in much worse shape than the mere symptoms of decompensation suggested.

Dr. Cabot I do not see that we can blame ourselves for not suspecting bacterial endocarditis. You can suspect it only when you have heart murmurs not otherwise accounted for, or embolism, or a positive blood culture. We had no evidence of embolism, no positive blood culture. We cannot say we were wrong because we forgot anything or reasoned wrong.

#### CASE OF DROWSINESS AND NOSE-BLEED

(No. 13581, Case Records of Mass. Genl. Hosp., from Boston M. & S. Jour., of Feb. 9, 1928, p. 1521.)

##### Case Record

First admission. A Canadian rubber worker twenty-eight years old was sent from the Out-Patient Genito-Urinary Department August 31 for swelling and tenderness of the left testicle of three months' duration. The swelling increased for two months after its appearance, then decreased. At admission he still had a hard tumor, and a discharging sinus on the right testicle.

His past history was entirely negative so far as he could remember except for a running sore on the left testicle four years before admission.

The family history is not important.

Clinical examination showed enlarged axillary and inguinal lymph nodes varying in size from being just palpable to the size of a grape. In the right groin the glands below Poupart's were enlarged and slightly tender. The epididymis was much thickened, indurated, adherent to the skin and showed a small crater-like sinus with rather abrupt edges. The upper pole of the left testicle was thickened.

At operation a much thickened and in places caseous epididymis was removed. A pathological report of tuberculosis was made. The patient made a good convalescence and was discharged relieved September 11.

History of interval. He was given tuberculin in the Out-Patient Department for two years and a half. At the end of that time he was feeling perfectly well, with no symptoms. The wound was clean and solid. In September, three years later, examination in the Accident Room showed no masses. The left epididymis contained a few small hard nodules which were not increasing in size. The general condition was excellent—appetite good, weight increasing, no cough. Five years after this note he had a right nephrectomy in another hospital following a kick from a horse. There was "blood clot" in the kidney(?). (Tuberculous kidney?) He was out of work six months. After this he was free from symptoms for five years. Two years before admission he had nycturia three or four times for four months. The same year he had a "pimple" in the penis which started to spread and located on the foreskin. He treated it with a salve which made it break and spread. It did not clear up for eight months. A year before admission he felt tired and run down. He seemed to improve after a short time, but in about ten months again began to tire easily, especially when doing heavy work, although he could run without any ill effects. About a month before his readmission he began to be dyspneic on climbing one flight of stairs, and felt drowsy. He grew gradually worse. A physician put him on a diet without relief. For four days before readmission he vomited about once a day. He thought his urinary stream was not so strong as it had been. There were no other urinary symptoms. For four days he had been in bed for the first time. For two days before readmission he had been unable to bear his weight on his legs. The day before readmission he could not move his hands at all. The day of admission he could move them a little. He had a tingling feeling like pins and needles in his legs and feet. His feet were cold and numb. He felt drowsy. For seventy-two hours (?) he had not slept. The day before admission and the morning of admission he had nosebleed for a short time. His mouth was dry. He thought he had had no loss of weight during the present illness. His best weight was 160 pounds, when he was nineteen years old, his present weight 137.

No benzol was used in his department of the factory and he did not come into contact with it in other departments.

Second admission, August 27, fifteen years after his first admission.

Clinical examination showed a pale, poorly nourished man lying flat in bed in no apparent distress, with bleeding from both nostrils and dried blood upon his lips. The skin and mucous membranes were pale, with a questionable slightly icteric tint. The eyes showed subconjunctival hemorrhage about the outer circumference of the iris and across the sclera at two o'clock. On the under side of the

tongue were two moist lesions, not indurated, one centimeter and half a centimeter in diameter. The few remaining teeth were decayed. There was bleeding about the roots of all the lower teeth. The apex impulse of the heart was not found. There was no enlargement to percussion. The sounds and action were normal. A blowing systolic murmur replaced the first sound at the apex and the base. The artery walls were normal. The blood pressure was 155/100. The abdomen showed voluntary spasm. In the left upper quadrant was a mass descending with respiration, feeling more like kidney or glands than spleen. There was resistance and dullness in the right upper quadrant, perhaps voluntary; no mass was felt. On the dorsum of the penis was a lesion 3 by 1.5 centimeters, indurated along the upper border, punched out, old in appearance, oozing serum from the center. The legs showed weakness but not paralysis. The arms showed slight weakness. The pupils and fundi were normal, the knee-jerks diminished. There was no reaction on stroking the foot for Babinski. The touch sense was diminished. The other sensory reactions were normal.

The amount of urine is not recorded. A specimen in the Emergency Ward was loaded with pus. An overnight specimen showed 0 to 1 leucocyte per field, no red cells, a very slight trace of albumin, specific gravity 1.016. Blood: 5,800 leucocytes, 88 per cent. polynuclears, hemoglobin 25 per cent., reds 3,000,000, moderate achromia and variation in size and shape, rare polychromatophilia, reticulated cells 2 per cent., platelets increased. Wassermann negative.

Temperature 97° to 99°, rectal. Pulse and respirations normal.

The patient entered at four o'clock in the afternoon. He seemed semistuporous and was anxious to be put to sleep. Veronal was not effectual, codein was vomited and paraldehyde by rectum was expelled. At midnight 1/6 of a grain of morphia and 1/200 grain of scopolamin were given subcutaneously. At one o'clock in the morning there was complete paralysis of the legs, with absent reflexes and rapidly progressing paralysis of the arms. Respiratory paralysis soon set in. A lumbar puncture was negative. At three o'clock the patient died from steadily increasing respiratory paralysis.

## DISCUSSION

(Before Clinical Club of Phoenix, Mch. 24, 1930.)

### DR. JOSEPH M. GREER

The first thing that strikes our attention in this case is the swelling and tenderness of the testicle of long duration. The length of time almost rules out an epididymitis of gonorrheal origin. The next two things to consider are tuberculosis and malignancy. The tenderness points toward tuberculosis rather than malignancy. The observation that the swelling decreased after two months points against a malignancy and the discharging sinus is in favor of tuberculosis. The running sore on the testicle four years before is suspicious of tuberculosis.

The enlarged glands in both axillary and inguinal regions makes one think of some of the other conditions that produce adenopathy, such as Hodgkin's disease and the leukemias. In Hodgkin's disease, however, the enlargement is usually unilateral, at first at any rate, and is noted first in the submaxillary and cervical glands. The leukemias may be ruled out by the blood picture. The general adenopathy is not the picture of glandular tuberculosis or the leukemias and it is probable that we shall have to look elsewhere for its cause. The patient's general condition would no doubt produce some moderate adenopathy of these regions.

The thickened and indurated and adherent epi-



didymis, clinically is tuberculosis and we note at operation that a caseous epididymis was removed and the pathologist reported tuberculosis. Therefore so far may make a diagnosis of Tuberculous Epididymitis.

The interval history with improvement is rather characteristic of tuberculosis. As to the diagnosis and reason for nephrectomy five years later following injury we can only guess, as the history is silent upon the length of time after injury that the kidney was removed. The "blood clot" could be either injury or tuberculosis. It would be my guess that it was tuberculosis.

The next sign, namely, pimple on the penis, opens up the great question of syphilis and we will no doubt need some help from Dr. Colhessy on this subject. It is my opinion, however, that it was not syphilis for upon this alone in a patient with this history with no history of secondary manifestations and no history of antiluetic treatment and a negative Wassermann it would seem that we would not be justified in a diagnosis of chancre. It is possible that the condition was only a herpes and its chronicity due to over treatment.

The tire easily symptom suggests tuberculosis, although his anemia might do it. We would like to know something about the chest, but the history and physical findings are absent and the usually present radiologist on a vacation. We must think of his anemia which may account for his fatigue. This is no doubt a secondary anemia and accounts for his paleness icteric tint and heart murmur. It may also account for his present hemorrhages from the nose and gums. Hemophilia probably should be kept in mind, but we have nothing in either the history or the laboratory findings to suggest it. The mass in the abdomen was probably an enlarged kidney, maybe a pyonephrosis as one specimen was loaded with pus and one was not. We might think of a hypernephroma but there is no mention of bronzing of the skin or other manifestations to support it. I do not know just what is meant by this mass feeling more like kidney or glands than spleen. The dyspnea and drowsiness suggests some pulmonary or circulatory condition and we find later on that he has anemia enough to produce this although again we would like to know more about his chest. We find the note that he was unable to bear weight on his legs. We take it that this is because of weakness which is probably accounted for by his general condition and anemia. However this may be suggestive of something affecting the motor areas or the fibers which of course would have to be rather diffuse as there is no mention of there being any difference on the two sides.

It seems to me that the blood pressure in this case was rather high for a patient in this condition, but I suppose that this is nothing apart from the ordinary.

The reflexes as reported are rather indefinite and do not indicate anything tangible. The spinal fluid is negative so we do not have enough data to make a diagnosis of meningitis. However the vomiting and drowsiness, the motor paralysis of the hands which cleared up a little, points to something in the spinal cord. This could not very well be a localized involvement in the cord and that alone, however, as in such a case we should have exaggerated reflexes and Babinski. However, the symptoms point to some involvement in the sensations of needles and pins and the disturbance of touch sensation. It seems to me that even in presence of a negative spinal fluid and indefinite reflexes, we cannot rule out an involvement of the brain and cord.

Therefore, I shall venture a diagnosis as follows:

Based on data given: Epididymitis. Tuberculous and genito-urinary tuberculosis. Anemia secondary.

Speculative diagnosis: Meningitis, localized or limited, with possible tuberculoma.

DR. RICHARD C. CABOT

(In part from journal above.)

#### DIFFERENTIAL DIAGNOSIS

The background of the case so far as the previous history gives us any evidence is one of tuberculosis of the genito-urinary tract. I do not see that we have anything else that we are at all sure of. He has this lesion on the penis, the nature of which I do not know. I do not believe it is syphilis. Then after this long interval of fair health he comes in bleeding from the nose and mouth, with a moderate secondary anemia, with a rather high blood pressure, and with pus in one urine specimen and not in another.

He certainly has not anemia enough to die from, but he perfectly well might die if another hemorrhage such as he has had happened to hit the nervous system, perhaps in the region of the medulla or perhaps in the ventricles.

If we take the account of the lumbar fluid literally, as I suppose we must, we must say that he had no meningitis. Anybody who is semistuporous and has a previous history of tuberculosis lesions makes us think first of tuberculous meningitis. But I think that can be ruled out here.

A paralysis coming on as rapidly as this cannot possibly, that I can see, be a cord paralysis in the absence of any demonstrable spinal lesion. Besides which his spinal fluid ought not to have been negative if he had something bulging into the cord from the vertebrae. I think we have to say that it is a brain lesion, and a brain lesion coming on more rapidly than any brain lesion that I know except cerebral hemorrhage.

That of course is only the terminal event. He had a secondary anemia and some bleeding before that. What the cause of that bleeding was I do not know. We have no study of the blood in relation to the different types of purpura. One cannot tell whether the platelets were decreased or not. It may be a thrombopenic purpura. That would go with cerebral hemorrhage as the terminal event. Tuberculosis seems to be one of the diseases which predisposes to thrombopenic purpura.

I do not see that we have any good reason to suspect nephritis, though since his blood pressure was a little high and his urinary gravity a little low, it goes through our minds as a possibility. I suppose the majority of cases of genito-urinary tuberculosis, we have reason to believe, in one kidney. He may have some in the other now. But without an examination of the urinary sediment and catheterization of the ureter I do not see how we can say more on that.

A thing that influences me against glioma is the knowledge that he was bleeding from other points, so that it seems quite possible that he might be bleeding in his brain. I do not think I can go any further on that. I think he has a focus of tuberculosis still in his genito-urinary tract. I think he has a purpuric type of bleeding, I suppose with low platelets, perhaps based on that tuberculosis. I think he has a cerebral hemorrhage. I do not mean to try to say where that cerebral hemorrhage is. My luck in predicting the localization of cerebral lesions has seldom been good.

DR. CABOT'S DIAGNOSIS

Cerebral hemorrhage.

Genito-urinary tuberclosis, prboably in the left kidney.

Purpura hemorrhagica.

DR. TRACY B. MALLORY

Anatomic Diagnosis: Tuberculosis of the left kidney.

Tuberculous ureteritis and cystitis miliary tuberculosis.

The case from beginning to end is one of tuberculosis. The brain on examination proved entirely negative, also the meninges. The lungs, liver, spleen showed miliary tubercles. The left kidney was considerably enlarged and was almost completely destroyed by caseous necrosis. The process had extended down the ureters. There were miliary tubercles the entire length of the ureters. There was tuberculous cystitis and prostatitis. The mass in the left upper quadrant may have been either spleen or kidney so far as we could determine. Both were enlarged, the spleen weighing nearly 300 grams, due to the miliary tuberculosis. The kidney was enlarged, probably both by the tuberculous process and as a compensatory hyperplasia for the absent kidney on the other side.

As to the respiratory paralysis I have only a suggestion to offer. On talking it over with the house officers afterwards it seemed to me that considerably more stress was laid on that than was perhaps justified. The duration of this symptom from its onset to death was only a little over an hour, in an extremely weak man who had just been given morphine. And when one comes down to it, all cases before they come to us do show respiratory paralysis.

### ABSCESS OF THE LIVER AND ATYPICAL AMEBIC DYSENTERY (CASE REPORT)

R. B. RANEY, M. D.

(Discussed at the Staff Meeting of the St. Joseph's Hospital, Phoenix, Feb. 4, 1930.)

The following case, I think, will represent a group which go on to autopsy for an accurate diagnosis when they should be well understood in life with the proper interpretation of symptoms and the methods of diagnosis followed out in detail. I do not mean to say that a diagnosis should be made in all cases because that, as we all know, is beyond the possibilities of human endeavor, but there are a great many cases that are not thoroughly understood, not for a lack of knowledge regarding the symptom complex, but for failure of thorough study of the case at hand.

The patient entered St. Joseph's Hospital Nov. 1, 1929, and came under my observation Nov. 26 in consultation. The history obtained at this time was that of a progressive downward course, the initial onset in June of 1926. Chief complaints at that time were dyspnea, loss of strength, appetite and weight, with occasional passage of blood in the stool. This condition continued until February of 1929, when pain in the upper left quadrant developed. The pain was dull and aching in character as a rule, but occasional sharp seizures intervened. They were in no way affected by food or alkali. Confined to the area of origin without reference, and affected principally by change of posture. Patient noted that pain was more pronounced on standing than when lying down. However, this feature was only periodic and by no means constant. In summing up the points in the history from the onset to the time that this patient first came under my observation, there seems to have been a progressive downward course with a loss in weight from 150 to 100 pounds, dyspnea, loss of appetite and strength. Pain developed during the last six months of illness in the upper abdomen. Nausea on eating during last three months of illness, but no vomiting. However, eructation of mucus was quite pronounced during last three weeks. Passage of small quantities of blood at various intervals and otherwise apparently there was nothing of import-

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### CASE OF EPIGASTRIC PAIN AND CONTINUED FEVER

(No. 15141, Case Records of Mass. Genl. Hosp., from N. E. J. of Med., Apr. 4, 1929, p. 715.)

#### Case Record

An Irish-American meat-packing checker forty-nine years old entered May 16 complaining of epigastric pain.

This pain began a year and a half before admission. At first it was a discomfort, "as if he were filled with concrete," and came on after and also before meals. Lately it had become sharp, darting through to the left shoulder, with pain over the heart followed by numbness of the left shoulder. It was now not related to meals except that he had a dull heavy feeling after eating heartily. When he took physic he felt a little better for a day or two. For six months his appetite had been getting very poor. He occasionally had some nausea, but did not vomit. His bowels had been irregular for a year and very constipated for six months. His stools may have been clay colored. He had never been jaundiced. After he passed the barium given him for x-ray examination he noticed a slightly bloody stool. His stools had always been very hard and he had always had to strain. He had rare night sweats. For six weeks he had had vertigo on stooping. Five weeks before admission he was obliged to give up work because he was tired and dyspneic. During the past three weeks he had lost much weight—about twenty pounds in the past two weeks—and had been very dyspneic on exertion.

His family history is not significant. He had been married twenty years. His wife had never been pregnant.

His past history is negative except that he formerly was "nervous" and did not sleep well. Recently he had slept better. Formerly he took a great deal of alcohol; for three months he had taken none.

At the Out-Patient Department May 2, two weeks before admission, it was further learned that food relieved his pain and that he had had much gas after meals and at night. He had morning headache. Examination showed slight tenderness in the epigastrium.

X-ray examination of the stomach showed no six-hour residue. The duodenal cap filled out normally. Peristalsis was normal. On the posterior wall of the fundus, particularly about the midportion of the stomach and the cardia, large filling defects were noted.

Clinical examination in the wards showed a pale man with dry skin and evidence of loss of weight. There was a small red area over the tenth vertebra. The heart was long and narrow (long thorax); no abnormalities except a soft systolic murmur at the apex. Pulses, arteries and blood pressure normal at admission. An electrocardiogram showed sino-auricular tachycardia, rate 140, diaphasic T. Liver dullness from the sixth rib to about two centimeters below the costal margin. Edge not definitely felt, but resistance was noted in the areas shown in the diagram. There was dullness in Traube's semilunar space and slight spasm in the left epigastrium. There was marked impulse in the right inguinal ring on cough. The fingers and toes were clubed. There was a red external polypoid tab protruding from the anus. No hemorrhoids were noted.

Urine: specific gravity 1.024 to 1.008, cloudy at six to thirteen examinations, alkaline at two, neutral at one. Benedict's test green at one, leukocytes at all of the last seven tests, sediment loaded at two, one red cell to great numbers of red cells at

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## CASE OF PONTILE HEMORRHAGE

B. M. BERGER, M. D.

Phoenix, Arizona

Discussed before the monthly Staff meeting of Good Samaritan Hospital, on Feb. 24, 1930.)

On June 29th, 1929, I was called to the home of this patient, a married woman, age 32. Her husband and two children, and father, mother, one brother and one sister, at that date were living and well. She went to work a 5 a. m., and returned at 8 of the same morning with no other complaint than feeling tired. This was shortly before becoming unconscious. No history of vomiting or gastrointestinal disturbance. No headache. A hurried examination revealed the pupils fixed and contracted, breathing shallow with an inspiratory rather than expiratory effort. Rapid heart beat with evidence of enlargement on percussion, and no paralysis of muscles or limbs. She had clonic contractions of both arms and hands and rigidity of lower jaw. Systolic blood pressure was 65-70 and diastolic 0-5. Rectal temperature at least 111 F. checked by two graduate nurses and myself, twice within five minutes after entrance. Within ten minutes after entrance she became extremely cyanosed and expired. During the reading of death records for that month it was suggested that this was a case of heat prostration. I wrote the Journal A. M. A. asking for information and literature and the following is the reply

"This would seem to be a definite case of pontile hemorrhage. None of the cardinal signs are lacking. The history of a short interval of vertigo followed by a sudden loss of consciousness which is associated with contracted, fixed pupils and marked hyperpyrexia in a case which goes rapidly on to a fatal termination leaves little room for doubt as to the diagnosis. This history is unusually typical of a hemorrhage into the pons.

"As to differential diagnosis, it would seem that this case is unusually free from those elements on which differences of opinion can be based. Embolism of the medulla has been suggested; however, as there is no mention of any possible source of such emboli (endocarditis, thrombi, septic processes), or of any other embolic manifestations, this diagnosis seems extremely unlikely. It is true that the information supplied does not explain the hemorrhage in a patient this young. Nevertheless such occurrences, though not common, are not a rarity and certainly are far more common than embolism without apparent source. Although there is no evidence pointing toward the presence of either syphilis or hypertension, they must be thought of as possible etiologic factors unless definite evidence against them can be presented. Academically at least a few other possibilities must be considered in differential diagnosis. However, these are readily ruled out. A cerebral hemorrhage, the usual type of apoplectic seizure, would be associated with dilated rather than constricted pupils and is not associated with such a marked hyperpyrexia, even terminally. A marked flaccidity of the extremities of one side or the other would most likely be present, and in addition a systolic blood pressure of 80 would be most unusual. Thrombosis of the vascular supply to either the medulla or the pons would be preceded by a much longer prodromal period which would undoubtedly be associated

with definite signs of involvement of the medullo-pontile nuclei and probably of the cerebellum because of the intimate relationship of their arterial supply. A neoplasm involving the brain stem would also be much slower in development, and although the termination might come suddenly it would most certainly be preceded for several days or weeks by unmistakable signs. Acute bulbar palsy as defined by most authors includes both pontile and medullary hemorrhage. It also is referred to as acute inferior poliomyelitis, which indicated an infectious state. Cases of an infectious nature exhibit no such rapidity of progression and termination as is exhibited here and usually are obviously of an infectious nature or associated with an infectious disease (usually in childhood). This rare condition has been thought to be closely related to acute anterior poliomyelitis so far as etiology is concerned.

As to differentiating between pontile hemorrhage and a hemorrhage into the medulla, it can only be said that the contracted pupils and marked pyrexia are typical of the former and certainly the pons was principally involved in this case. However, it would be impossible to say that the hemorrhagic process did not extend downward into the medulla and doubtless microscopic examination of these structures would indicate that it did."

Meager references to this subject are available in most neurologic textbooks.

In conclusion I wonder if, on account of the heat which seems mild and insignificant to old-timers of the Salt River Valley, we are not prone to ascribe symptoms to the pranks of temperature rather than definite pathology.

### DISCUSSION BY DR. W. W. WATKINS

I believe the diagnosis of heat prostration, or insolation, is made too frequently on insufficient evidence. Dr. Berger became justly indignant when a nice, flossy diagnosis like pontine hemorrhage was clouded by comment from the Records Committee. If I were able to make a diagnosis of pontine hemorrhage from a patient's symptoms, I would feel aggrieved if some one were to come along and say, "O. it is just heat stroke." I offer for your edification, a brief summary of another case, full details and discussions of which will be in Southwestern Medicine when it comes off the press next week. This is not a local case, but one of Cabot's cases:

A Swedish carpenter, age 47, went to work on June 7th feeling perfectly well. It was a very hot day, being 94 in the shade in Boston; patient worked on the outside of the house and in the sun most of the time. About noon, he felt weak and dizzy and had to sit down; then vomited and was assisted home. Doctor called and found him in collapse, conscious but very weak, bathed in cold perspiration, mouth temp. was 94, B.P. 90/50, pulse weak and irregular but slow. He passed gradually into coma. The next morning his temp. was still subnormal; at nine o'clock temp. went to 104 and pulse to 150. At noon pulse was 160, resp. 16, B.P. 140/80. Patient died while being catheterized.

The interesting thing here is that all the clinicians who discussed this case diagnosed heat prostration, with which the clinical picture is consistent. Post-mortem examination showed the essential lesion to be hemorrhage and softening in the posterior third of the left cerebellar lobe; there was evidence of some increase of pressure under the tentorium, forcing the pons into the foramen magnum.

## BOARD OF MEDICAL EXAMINERS OF ARIZONA

At the July, 1930, meeting of the Board, the following physicians and surgeons were licensed to practice medicine and surgery in Arizona:

JOSEPH D. VERTIN, Monrovia, Calif. Graduate of Loyola University, Chicago, 1916. By reciprocity with Illinois.

BENJAMIN HERZBERG, Phoenix, Ariz. Graduate of St. Louis University, 1929. By examination.

JAMES LEWIS JOHNSON, Chattanooga, Tenn. Graduate of Vanderbilt University, 1915. By reciprocity with Tennessee.

JOHN WILLIAM HUFFMAN, Florence, Ariz. Graduate of Northwestern University, 1930. By examination. Dr. Huffman will be associated with his father in practice.

CLARENCE E. BENSEMA, Tucson, Ariz. Graduate of University of Illinois, 1929. By examination.

JULES F. LaDURON, Superior, Ariz. Graduate of University of Louisville, 1920. By reciprocity with Indiana.

CHARLES N. SARLIN, Port Huron, N. Y. Graduate of Columbia University, 1921. By reciprocity with New York.

MYRO GILMORE WRIGHT, Denver, Colo. Graduate of University of Colorado, 1917. By reciprocity with Colorado.

At the October meeting of the Board, the following physicians and surgeons were licensed to practice in Arizona:

JOHN HUFFMAN WHITE, Rochester, Minn. Graduate of University of Oregon, 1926. By reciprocity with Minnesota. Dr. White will be associated with the Southwest Clinic in Phoenix.

HOBART B. STEWARD, Coolidge, Ariz. Graduate of St. Louis University, 1927. By reciprocity with Kansas.

HARVEY EDWARD MOSS, Kansas City, Mo. Graduate of Louisville Medical College, 1893. By reciprocity with Kansas.

JAMES J. LaSALLE, Phoenix, Ariz. Graduate of University of Michigan, 1896. Reciprocity with Ohio.

BLOOM BENSON, Tucson, Ariz. Graduate of Johns Hopkins University, 1926. By reciprocity with Illinois.

HAROLD HENRY RING, Tucson, Ariz. Graduate of Iowa State University, 1926. By reciprocity with Iowa.

EDW. HARRISON CALVERT, Scottsdale, Ariz. Graduate of Ohio State University, 1927. By reciprocity with Ohio.

MARCUS B. CIRLIN, Chicago, Ill. Graduate of University of Illinois, 1923. Reciprocity with Illinois.

ALAN C. SUTTON, Tucson, Ariz. Graduate of Johns Hopkins University, 1916. Reciprocity with Maryland.

HAROLD JAMES SCHILLING, New Hampton, Ia. Graduate of Marquette University, 1927. Reciprocity with Iowa.

PERCY BROWN, Boston, Mass. Graduate of Harvard University, 1900. By reciprocity with Massachusetts.

JOSEPH JAMES BOUCHER, Hartford, Conn. Graduate of College of Physicians and Surgeons, University of Maryland, 1904. By reciprocity with Connecticut.

VIVIAN TAPPAN, Tucson, Ariz. Graduate of Johns Hopkins University, 1927. By examination.

HEBER O. TUCKER, Phoenix, Ariz. Graduate

of Johns Hopkins University, 1929. By examination.

JACK R. HILD, Douglas, Ariz. Graduate of Tulane University, 1929. By examination.

CARL EUGENE ETHERIDGE, Phoenix, Ariz. Graduate of University of Arkansas, 1929. By examination.

CLARENCE L. ROBBINS, Tucson, Ariz. Graduate of University of Arkansas, 1929. By examination.

DWIGHT M. DETER, Tucson, Ariz. Graduate of Baylor University, 1929. By examination.

## COURSE IN ENDOCRINOLOGY IN PHOENIX

DR. E. KOST SHELTON, Santa Barbara, California, first assistant to Dr. William Englebach for the past several years, will be in Phoenix to give a course upon Endocrinology. There will be six two-hour lectures. The lectures will be illustrated and will embrace the following:

1. Introduction.  
Autonomic nervous system.  
Pituitary—Hypo- and hyper-activities of both the anterior and posterior lobes.  
Pituitary tumor.
2. Thyroid—Hypoactivities. Cretinism and myxedema.
3. Thyroid—Hyperactivities. Goiter (colloid, exophthalmic and adenomatous.) Pituitary-thyroid and thyropituitary disorders.
4. Gonads—Hypo- and hyper-activities in both male and female.
5. Parathyroids—Hypo- and hyper-activities. The newer conceptions of calcium metabolism. The suprarenals (medulla and cortex).
6. The thymus and pineal—Pluriglandular disorders. Clinic.

Dr. Shelton has the following to say: "Each subject would be treated about as follows: A brief resume of the phylogenesis, embryology, anatomy, histo-pathology and physiology of the gland, its relationship to the entire endocrine system and other systems of the body, its clinical significance and modern treatment of its disorders. Of course this takes up a lot of modern biochemistry, particularly regarding the anterior lobe of the pituitary and the gonads. The lectures would be entirely practical from a clinical standpoint, however, and be of interest and value to every man no matter what his specialty."

The fee for the course is \$25.00 providing there are as many as ten men taking the course.

Those who wish to take the course will please apply to Dr. Orville Harry Brown.

## DALLAS SOUTHERN CLINICAL SOCIETY

Elsewhere in this issue will be found advertisement of the second annual Clinical Conference of the Dallas Southern Clinical Society, to be held from March 30th to April 3rd, 1931. This is very advantageously placed immediately following the Congress of the College of Physicians in Baltimore which will close on March 27th.

The Dallas meeting was a very successful one this year (1930), and a very attractive program is in the process of construction for the 1931 Conference.

## SITUATIONS WANTED

WANTED—Salaried appointments for Class A Physicians in all branches of the Medical Profession. Let us put you in touch with the best man for your opening. Our nation-wide connections enable us to give superior service. Aznoes National Physicians' Exchange, 30 North Michigan, Chicago. Established 1896. Member The Chicago Association of Commerce.



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## WHAT TO DO IF THREATENED WITH SUIT FOR ALLEGED MALPRACTICE

(The following outline is furnished by Dr. D. F. Harbridge, Secretary of the Arizona State Medical Association, and applies particularly to the physicians and surgeons of that state.)

A physician threatened with a suit for alleged malpractice usually receives his first intimation of the same in the form of a letter from an attorney, stating that his former patient has recently sought his legal advice, and that considerable trouble might be saved by all concerned by an early interview between the physician and the attorney.

What should a member of the Arizona State Medical Association do under such circumstances?

He should, without comment, promptly acknowledge receipt of the communication, and state that further reply would no doubt be made in due time by his (the physician's) legal representative (not necessary to name.) The threatened member should immediately send copies of this correspondence to the Secretary of the Arizona State Medical Association. This done, there is no occasion for haste, and no occasion for actually consulting an attorney until after a formal summons from the Superior Court has been served by a representative of the court. Such a summons always mentions a time limit, usually twenty-one days, during which an appearance must be made in court in behalf of the physician upon whom summons has been served. This period leaves ample time for the completion of a formal application by the member for the assistance of his State Medical Association in the conduct of his defense.

Every step in the requirements printed on the application blank is based on fifteen years' experience in the administration of the medical defense benefits of our State

Association, and is designed to acquaint the Medical Defense Committee, and the legal counselor for the Association, with the charges against the threatened member, as well as his recital of his methods pursued in treating the case. The names of consultants called, if any, and the office or laboratory and hospital records of the case available for developing plans for the conduct of the defense in court are thus reviewed by certain of the threatened physician's fellow-members. As a result of this care in approving applications for defense by the State Association, many threatened suits in the past have been abandoned and those coming to trial have always heretofore been successfully defended.

In conclusion, all members are advised to pay their annual county medical society dues promptly; second, to keep records of all patients; third, to seek consultation in unusually difficult cases; fourth, to require patients refusing x-ray examinations, when requested, to sign a release blank; fifth, tolerance and exercise of the severest caution not to criticize before a patient the work of a colleague; and, finally, to consult promptly the secretary of the county medical society or the state association before discussing with an attorney any threat based on alleged malpractice.

## SIXTH BIENNIAL REPORT OF THE NEW MEXICO BUREAU OF PUBLIC HEALTH.

This is a very handsome brochure, one of those we like to file away for future reference. Handsomely printed, on fine paper, it contains some very interesting data. It summarizes by graphs the information previously given in a paper by Dr. C. S. Luckett, Director of the Bureau. It then summarizes the activities and work of the Bureau during the two year period from July 1, 1928, to June 30, 1930.

## ARIZONA STATE BOARD OF HEALTH MONTHLY BULLETIN

The August issue of the Bulletin of the Arizona State Board of Health is a very pleasing pamphlet. It is pleasing because it gives some very interesting information in readable type, and because it apparently intends to inaugurate a new series of monthly bulletins for that state. The article on the "Full Time Health Units for Arizona" is worthy of quotation in extenso:—

### THREE FULL-TIME COUNTY HEALTH UNITS FOR ARIZONA

The greatest advance in health yet made in Arizona, according to U. S. Public Health Service Standards, and other health agencies interested in the promotion of the prevention of disease, has been the establishment of a full time unit in Pima County, the first county in Arizona to set up. This is due to the cooperation between the state board of health, the board of supervisors and the county board of health of Pima county.

The unit opens with a county director of public health; three nurses; a sanitary inspector and a clerk.

Gila county is the next, and has also signed for its full-time unit, providing for a county director of public health; a nurse and a sanitary inspector.

In this connection the cities of Miami and Globe have joined with the county in forming this unit, by appointing the same personnel as the board of supervisors. Thanks are due them for this cooperation.

The Board of Supervisors of Maricopa has just signed a budget of like intent, which provides for a full-time health unit in that county, with a health officer; two health nurses; two sanitary inspectors and a clerk, together with ample provision for laboratory purposes.

With these three counties fully organized, approximately 55% of the entire population of the state of Arizona is under full-time units—this with Cochise, Yuma and Coconino, which have full-time health and indigent officers, gives Arizona practically 43% of its counties under full-time men. Provision has been made by the U. S. Public Health Service for at least one more county to be set up.

For the period beginning July 1st, the State Superintendent of Public Health has been able to obtain from the U. S. Public Health Service and the Rockefeller Foundation, the total sum of \$17,100 to apply on county health units. This amount of money for this next year is almost equal to the total amount appropriated to the state board of health, namely \$21,400. Altogether, beginning January 1st, 1930, Arizona has been allotted funds from the U. S. Public Health Service and the Rockefeller Foundation, a total of \$27,000, or more than one year's appropriation. The proper handling of these funds and the success of the county health units will predicate further help from these and other outside agencies. It is clearly up to the people of Arizona to get back of these health units to see that they function properly. These health units, in order to accomplish the best results, must be free from outside influence which would tend to throw away the public good for personal desires.

It is believed that here in Arizona the consciousness of the people has been awakened and that the intelligent part of our population, which is unusually high, will prevail in making Arizona the best state in the union from a public health viewpoint.

## SCIENCE AND CULTISM

The editor has been holding on his desk, for several months, the editorial which appeared, under the above title, in the Journal A. M. A. for Feb. 1, 1930, waiting until the memory of it has had time to grow dim in the minds of the readers of that journal, in order that we might reprint it with proper effect. There is meat here for thought and material for use of those who will discuss this matter with legislators during the coming months of trial, when the medical profession will engage in its ever recurrent fight to protect an unappreciative public from quacks and cults:—

"Now and then the medical profession is upbraided by the proponents of various notions in the field of health and science because it fails to give to their claims what they conceive to be adequate consideration. Again and again the difficulties of Galileo, Harvey, Jenner and Pasteur, when they attempted to convince the leaders of their times of the importance of their discoveries, are cited as evidence that scientists are intolerant. Apparently cultists and others who have had but little experience in reasoning and logic, or with what is known as the scientific method, fail to take into account the fact that the world has moved since the time of the prophets, and that science has advanced more in the past fifty years than in the previous fifty centuries. James Harvey Robinson wrote an interesting essay on "The Importance of Being Historically Minded." With a proper perspective, one realizes that science is today in a position to demand evidence to an extent that might not have been warranted in a previous period when the whole world was dominated by magic and mysticism.

Recently, Mr. Chester Rowell, feature writer for the San Francisco Chronicle, discussed the appeal for tolerance made by faith-healing cults in the Los Angeles Times, following an expose by the editor of The Journal of some of the weird quackeries existing in Los Angeles. Mr. Rowell says:

But the appeal for "tolerance" by one "school" or another, is an example of a common fallacy. There is no "tolerance" of astrology by astronomers. There is no "tolerance" of fortune-telling by psychologists, nor of perpetual motion inventors by physicists. Geologists do not locate oil or water by dowsing with a forked stick, nor "tolerate" those who do. Entomologists do not "tolerate" those who would exterminate insect pests by interfering with their spontaneous generation. Scientific agriculture does not "tolerate" the theory that potatoes grow wrong unless planted in the dark of the moon. All these "schools" exist, and they are all rejected outright as unscientific superstitions by every scientist in the world.

On the other hand, good Catholics tolerate the Holy Rollers and Buddhists tolerate the Mormons.



Atheists tolerate the faith of Christians and Christians the unfaith of atheists. Protestants and Christian scientists tolerate each other's religion, each respecting the right of the other to seek God in his own way. But the law of the land did not tolerate polygamy, when the Mormons said it was religion, and the Regents of the University of California do not permit the anti-vaccinationist student to endanger the health of other students, even though he calls his objection religious.

So in medicine. If it were a matter of faith, dogma or canons, one "school" should "tolerate" another. If it is a matter of science, then the only distinction is that of scientific and unscientific. And between science and non-science there is no equality of right, and no basis for tolerance. The fact that millions of devout people in India believe in casting their horoscopes by the stars does not erect them into a "school" of astronomy, nor impose on astronomy any obligation to recognize them. They are neither "regular" nor "irregular" astronomers—they are not astronomers at all. Neither is any unscientific theory or practice of healing any part of the science of medicine. There are only two sorts of medicine, scientific and unscientific. And of the unscientific "schools," science has only this to say—that they are unscientific.

How, then, shall we distinguish which principles and practices of healing are scientific, and which are not? The simplest test is that which we unhesitatingly apply in every other branch of knowledge. That is the judgment of scientists. If the scientists say that a certain thing is scientific, we accept it as such. If they all say it is unscientific, we say likewise, at least until it has succeeded in convincing them. Every scientific university in the world teaches astronomy, and not one teaches astrology. All of them teach chemistry and not one teaches alchemy. Every university in the world teaches scientific medicine, and not one of them—not a single one in the whole world—teaches or recognizes any of the "schools" or sects for which the Times speaks. If the unanimous voice of science means anything, this is its verdict.

The next test, and the decisive one, is that of method. Scientists may be mistaken, sometimes, in their results and conclusions. Sometimes a thing which seems true in the light of incomplete information becomes only partly true in the light of later discoveries. But science is not mistaken in its method. That method is systematic observation and experiment, and the submission of these observations and experiments to the scientists of the world, for them to repeat, to test and to scrutinize. Whatever pursues that method and is approved by that test is scientific—including, in medicine, light rays for tuberculosis, diet for many ailments and hydrotherapy for certain mental conditions. Whatever does not proceed by that method, or fails by that test, is unscientific—including all the cults, sects and schools which Dr. Fishbein rejects and the Times defends.

Mr. Rowell has placed his finger unerringly on the weaknesses of the cultists. His logic might well serve as a text in the schools, not only that it might aid the younger generation in learning the art of reasoning and judgment, but also that physicians might realize the basic folly of the strange schemes which are constantly being introduced to the public around them. —*Jour. A. M. A.*, Feb. 1, 1930.

## ABSCCESS OF THE LIVER AND ATYPICAL AMEBIC DYSENTERY

(Continued from page 493)

ance in the history. No history of diarrhea. In fact, patient specifically stated that he had never had any trouble with diarrhea, neither had he been afflicted with constipation.

Physical examination at this time disclosed a white male, approximately 50 years of age, with a marked degree of emaciation. On first appearance one would be immediately struck with the typically cachectic state of advanced carcinomatosis; however, on second thought there was something that suggested sepsis.

The abdominal examination disclosed a large mass in the upper abdomen which could be seen by inspection, non-pulsating in character and certainly not nodular. It was soft and boggy in consistency, without definite outlines, pulsating slightly on pressure and non-movable. There was a distinct murmur over this area, fading out upward towards the precordial region and downward over the abdominal aorta, synchronous with the cardiac impulse. There was little or no rigidity over the mass and only a moderate amount of tenderness. Rectal examination disclosed considerable tenderness and an edematous area over the prostate gland, proctoscopic examination being advised. There were no hemorrhoids, fissures or evidences of new growth. Aside from these findings the examination was negative, except of course for the advanced degree of emaciation.

X-ray examinations that were noted are as follows: November 1st, 1929, there was apparently a single plate taken in the region of the spleen with the report that there were no abnormal densities in that region or elsewhere in the abdomen. Subsequent to this report there was an examination of the stomach which showed contour of the pylorus normal, the duodenal cap showed no filling defect, nor was there other evidence of pathology. This was followed by a colonic examination. The barium snema would not pass beyond the iliac colon. There was no gross filling defect in this area. The barium given the previous day passed out of the colon and the impression was that this was a spasm of the bowel rather than an organic obstruction. Urine showed a heavy trace of albumin. R. B.C. 5,000,000; hemo, 70; leukocytes 14,900, polys 89. Gastric-analysis of Nov. 11 showed an acidity of 21, free hydrochloric acid 10. No occult blood. Wassermann examination was negative.

From Nov. 1 to Nov. 27, the course was progressively downward, afebrile in character with the exception of an occasional rise to 99 degrees intermittently. Treatment was diet with rest in bed. Occasional hypodermic of morphine was given for pain. In summing up the cardinal features of this condition, the following points seem most prominent. General downward progress, onset of pain of the character and type described, blood in the stool, rectal tenderness, evidence of tumor mass in the upper abdomen with its pulsating characteristics, the elicitation of a murmur confined to the mass, synchronous with the cardiac impulse, which died out downward over the abdominal aorta. The absence of positive findings on x-ray of the gastro-intestinal tract. The diagnosis noted on the hospital chart was cancer of the pancreas.

In summing up the salient features I can hardly agree that this patient is suffering from a malignancy of any type but would be rather inclined to think that in all probability there is a generalized infection and even in the face of a negative Wassermann, I would still suspect the general condition to be luetic in origin. The mass in the up-

per abdomen, I think presents enough characteristics that it might be called an aneurism of the abdominal aorta. However, I am putting forth opinion in the form of a working diagnosis for want of something better, and am not inclined to think that this patient's condition can be bettered in any way surgically. However, the object of consultation was to determine whether or not an exploratory laparotomy should be advisable and this procedure I think should be left to the discretion of the patient, which he decided on and requested the following day.

Operation: Exploratory laparotomy, Nov. 27. Under novocain anesthesia, midline incision made starting high up on the ensiform and extending downward to the right and little below the umbilicus. Liver and gall bladder were normal in appearance and position. The stomach was examined and appeared rather whitish in color probably due to the patient's condition but no masses, ulceration or adhesions were found. There was marked retroperitoneal edema but no definite mass could be made out. There was a large pulsating aorta but could not be interpreted as an aneurism. Intestine was pale but probably normal. In the region of the cecum there was boggy like mass infiltrating the wall, soft and irregular in shape, extending up about half way on the ascending colon and involving the entire circumference of the cecum. There was marked venous congestion in this region. Cecum was mobilized with difficulty. Appendix was retrocecal but normal in appearance. The ascending colon was found normal including the hepatic flexure to an area about half way across transverse colon. Another soft boggy nodular mass involving wall of colon was felt with slight ulceration on the peritoneal surface of the colon where another similar but smaller condition was found. The sigmoid could not be satisfactorily examined. Neither kidney could be satisfactorily examined because of the retroperitoneal edema.

A section was removed from the cecum and sent to the laboratory for pathological examination.

Abdomen was closed in the usual manner. Patient was given 500 c.c. of saline solution in the vein.

**COMMENT:** It is my impression that this pathology in the colon is probably secondary to pathology elsewhere. There is still possibility of some retroperitoneal tumor but because of the edema, this could not be made out.

**DIAGNOSIS:** Undetermined.

Patient expired Dec. 2, after a rather stormy post-operative course.

**AUTOPSY:** Examination was negative with the exception of the colon and the liver. There was a large abscess in the left lobe of the liver containing approximately four ounces of pus, which broke through at the diaphragmatic surface. The surrounding edema in the soft tissues explains the murmur heard in this region, and also the mass described in the physical examination. On opening the colon, there were multiple ulcerations along the entire surface extending from the cecum to the sigmoid, characteristic of amebic infection. The abdomen was filled with plastic exudate due to perforation of numerous ulcerated areas and resulting peritonitis which was the direct cause of the patient's death.

#### DISCUSSION

Dr. Joseph Madison Greer

In the discussion of a case of this kind it is probably in order to say a few words about amebic dysentery in general.

Amebic dysentery has been defined as an acute infectious disease caused by *entameba histolytica*

and characterized by the presence of multiple ulcers in the colon, which show a tendency to coalesce and to produce communicating sinuses in the submucous tissue and amebic abscess of the liver.

The exciting cause is of course the *entameba histolytica*, and as to the predisposing factors we usually think it is necessary for a patient to have been in the tropics in order to become infected with ameba. This case shows that this is not at all necessary as he was never in the tropics. Dr. Dysart has also called our attention to this point and has made the statement that he has seen cases of amebic dysentery in this section of the country that have never been in the tropics.

The adult male seems to be more often infected than either women or children. This is probably because of the water supply. The incubation period is given from seven to twelve days. The disease develops insidiously with a mild diarrhea for a while and then constipation. Then alternate attacks of diarrhea and constipation. There is gradual loss of strength and in advanced cases the patient may be unable to leave his bed. There are frequently complaints of ringing in the ears, anorexia and occasional attacks of nausea. There may be some fever at first but later the temperature falls to normal or below. Upon physical examination we usually find evidence of emaciation and associated signs, such as yellow skin, sunken cheeks, dry tongue, etc. There is also flabby muscles, edema of the ankles and later weak and rapid pulse.

During the attacks of diarrhea there is the passage of bloody mucus and amebae should be found. However in the chronic cases it is not always easy to find amebae. The blood findings should be that of anemia.

Of the complications of amebic dysentery, hepatic abscess stands out as the most important, although there are other complications as peritonitis, pyemia, malaria, bronchopneumonia, etc. Hepatic abscess may develop at any stage of the disease but usually after the disease has become chronic. The abscess is usually located in the right lobe near the superior surface, the organ as a rule is somewhat enlarged. In this case there was no appreciable enlargement of the liver and the abscess occupied the left lobe of the liver near the superior surface and replaced the liver substance rather than displacing it.

It would seem in this case that a diagnosis should have been made. If this man had a history of diarrhea, or if he had ever been in the tropics, the first sight of the colon would have caused an immediate exclamation of "amebic dysentery." If he had been a soldier or if I had operated upon him in an army hospital I am quite sure that I should not have been led astray. However, I am frank to say that I was so sure that there was a malignancy someplace that I did not think of a liver abscess even after exploring the abdomen and inspecting the colon. This was a case in which the history was misleading. Usually the history is the most important help in the diagnosis.

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## CASE OF EPIGASTRIC PAIN AND CONTINUED FEVER

(Continued from page 493)

six of the last eight. Blood 11,100 to 28,400 leucocytes, 67 per cent polymorphonuclears, hemoglobin 60 to 70 per cent, reds 4,020,000 to 4,840,000, moderate achromia. Two Hinton tests strongly positive, one Wassermann moderately positive. Fasting contents of stomach: 15 cubic centimeters of thick clear mucoid fluid, no free hydrochloric acid, combined acid 2, guaiac negative. Test meal: thick yellow mucoid fluid, no free hydrochloric acid, combined acid 13, guaiac strongly positive. Stools, guaiac positive at ten of thirteen tests, strongly to very strongly at eight.

X-ray examination showed the diaphragm low on the right, high on the left. The costophrenic angles were clear. There was generalized prominence of the larger lung markings. The aorta was slightly tortuous. The kidney outlines were rather indistinct on both sides. There were two shadows on the right, probably artefacts. The spine showed an anatomical variation in the fifth lumbar vertebra. The plate was unsatisfactory on account of motion. Plates taken with the radiographic catheter in position confirmed the previous findings. After injection, the pelvis of the right kidney was fairly well shown lying unusually low, opposite the transverse process of the third (?) lumbar vertebra. The lower pole of this kidney overlay the crest of the ilium. The pelvis was not enlarged or abnormal in shape. The usual cupping of the minor calices was present.

Temperature 97.7° to 102.2°, with elevation to 104.8° May 20 and a terminal rise to 105°. Pulse 75 to 131. Respirations not remarkable.

A surgical consultant advised exploration. One of the surgical chiefs advised against it.

The morning of May 20 there was a rise of temperature to 104.8°. The leukocyte count was 28,000. There was marked costovertebral tenderness on the right. The patient vomited but complained of no pain. That night the abdomen was slightly tense. The next day he vomited again. There were a few small blood clots in the vomitus. May 23 the temperature was nearly normal. In the right costovertebral angle a small firm irregularity was felt, quite tender to pressure. A genito-urinary consultant thought the shadow in the region of the right kidney might be a stone. A visiting physician believed exploration was warranted. The patient felt well. June 1 cystoscopy showed both ureters negative. The shadow did not show in the plates taken at cystoscopy. No evidence of renal pathology was found.

June 5 a blood culture showed streptococcus viridans. The organism differed from those isolated from subacute bacterial endocarditis cases both in morphology and cultural character. It was closely allied to organisms found in a few cases of arthritis and some rheumatic aortic heart valves at autopsy. June 9 another blood culture was negative.

June 11 a genito-urinary consultant thought there was a mild cystitis following cystoscopy and thought it was not a factor in the elevation of temperature.

The patient grew increasingly drowsy. He had almost constant hiccup for three days before death. June 18 he died.

### DISCUSSION

DR. FRANK J. MILLOY

(Before Clinical Club of Phoenix)

At first thought this looks like a complication of diseases. But I think it will resolve itself into that of a man with an old luetic infection who has developed carcinoma of the stomach. The main point

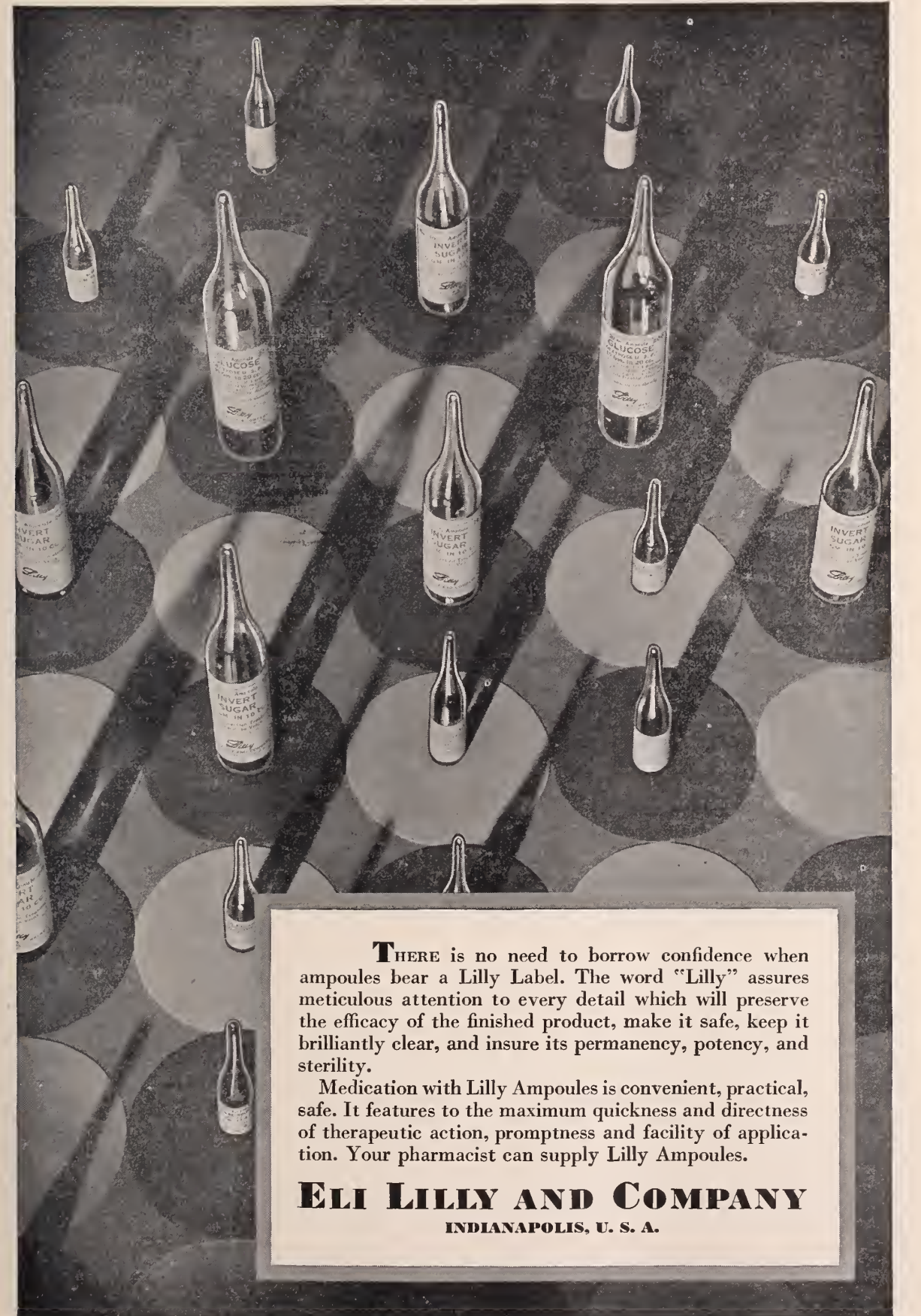
of differentiation is between carcinoma and syphilis of the stomach, and while syphilis may simulate any other disease, this is almost too typical a picture of carcinoma of the fundus to be syphilis. Carcinoma will explain any symptom here except the urinary findings and positive blood culture obtained at one time.

The age of onset (at 49), the history of onset beginning a year and a half before admission, the heavy feeling in the stomach at the onset, and the discomfort relieved at times by food, the feeling of relief after a physic, the gradual loss of appetite, the loss of weight and strength, and the stubborn constipation during the past six months, present a typical picture of carcinoma. The x-ray localizes the lesion in the fundus. This explains the slight nausea and absence of vomiting and other evidences of obstruction, because there was no organic process in the region of the pylorus. The stomach analysis is a little misleading; the total acidity of 13 and the absence of free HCl is more like gastric achylia. If a test for rennet had been made it would have decided this point. Rennet is absent in gastric achylia. In carcinoma you expect an absence of free HCl but a high total acidity. However, gastric achylia is a common finding in old luetic cases, without any other evidence of syphilitic involvement of the stomach, and this man may have had a gastric achylia before ever developing a cancer. There was no test made for lactic acid and nothing said about Boas-Oppler bacilli, but would not expect to find these present when there was no obstruction. The strongly positive guaiac test in the stools is one of the most important findings in favor of carcinoma of the lumen of the gastro-intestinal tract. There are only about seventy cases of gastric syphilis reported in the literature. It occurs in three forms; as an ulcer in the region of the pylorus simulating ordinary non-specific peptic ulcer, as an extensive infiltrating process in the wall of the stomach, or as a gumma. It seldom gives the strongly positive guaiac reactions on the gastric contents and stools, and very often there is a barium residue in the stomach. There was no residue in this case and if the observation had been made, it would probably have been found that the barium left the stomach rapidly, which is further evidence of carcinoma not involving the pylorus. But the main evidence against gastric syphilis is the fact that he did not respond to anti-luetic treatment, or else did not receive any.

Of course it is impossible to tell just how many of these terminal pains and other symptoms may have been caused by syphilis and how many by the carcinoma. Syphilis may explain the electrocardiographic findings. I think they are trying to find evidence of a hypernephroma also. X-raying the spine and searching for tumor in the region of the kidneys suggest this, but I cannot see where they have found any evidence. Hypernephroma is an affection of childhood or advanced age. Hematuria is almost a constant symptom. The normal pyelograms are against hypernephroma or other kidney tumor. There were a few blood cells at first but the blood cells in the later specimens were probably the result of the cystoscope. But this man may have had renal calculus and pyelitis. There is sufficient proof for this and hardly anything else will explain the blood and pus in the urine.

I do not know how to explain the positive blood culture. I doubt if it will be explained. There is no other evidence of endocarditis nor sepsis, and there is no evidence of nephritis. The variation in specific gravity, absence of albumin and edema, and normal blood pressure and arteries, are against any nephritic disease. The elevation of temperature and leucocytosis are not uncommon in carcinoma. The terminal hiccup may have been due to the





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carcinomatous process in the upper abdomen, or to interference with renal function toward the end.

Diagnosis:—Syphilis nad gastric carcinoma.

Diagnostic conclusions on this case were given by the following members of the Club:

Dr. F. C. Jordan:—Syphilis; carcinoma of stomach.

Dr. H. P. Mills:—Carcinoma of stomach; endocarditis, mitral and aortic; pyelitis of right kidney.

Dr. W. W. Watkins:—Possibilities from history, heart or aortic disease, stomach lesion, gastric crises, liver or gallbladder lesions, pancreatic lesions, abdominal angina, colon lesion. Clinical examination rules out heart; laboratory and x-ray establish stomach lesion, probably cancer and syphilis. Diagnosis: cancer of stomach, posterior wall with perforation, and septicemia.

Dr. T. T. Clohessy:—Syphilitic aortitis; gastric syphilis on which developed a streptococcic viridans septicemia. Gastric symptoms, achlorhydria, lung markings quite characteristic of syphilis; final illness and death from streptococcus viridans septicemia.

Dr. O. H. Brown:—Streptococcic endocarditis (mitral); cancer of stomach; syphilis; pyelitis and ptosis of right kidney; aortitis; hernia.

#### DR. RICHARD C. CABOT

(In part, from journal above)

We certainly cannot conclude much from that epigastric pain. It is about the commonest place for pain in the human anatomy.

The first two sentences in the present illness suggest angina pectoris. But the pain may be due to distention of the stomach with air.

Among the many symptoms noticed the dyspnea is perhaps the most outstanding. We wonder if he has a cardiac trouble or a hypertension. We wonder if he has a nephritis which has gradually gone on to produce his anemia. We wonder about his stomach on account of the gastric symptoms. We wonder about his gall bladder, but not very definitely. That is as much as we can do on the basis of that first long paragraph.

"It was further learned that food relieved the pain and that he had had much gas after meals and at night." That means they thought of ulcer.

X-ray examination of the stomach is very important in a case like this. Dr. Holmes, will you be good enough to comment on these plates for us?

Dr. George W. Holmes I might say first that the gastric examinations at this hospital are made largely with the fluoroscope. We depend very little on the plates in the final interpretation of the x-ray findings. When we find anything interesting

by fluoroscope we take plates to demonstrate it. This patient presents a deformity at the fundus of the stomach. From these plates you would not be able to say whether there was anything wrong with the pyloric portion or not. They were taken to demonstrate the deformity in the fundus of the stomach. Deformities in this region are the most difficult to demonstrate of all lesions of the gastrointestinal tract. Lesions of considerable size may be completely missed in this region. Success in demonstrating it depends upon watching the barium as it passes into the stomach and on examining the patient in a great many positions. The observation which is most valuable is the passage of the first swallow into the stomach. Another observation that is valuable is made with the patient on his back on the couch. When the patient breathes deeply the normal stomach changes in shape with each expiratory excursion. In a stomach infiltrated with cancer this change does not take place. In the lower portion of the stomach our diagnosis is much easier because we have peristaltic waves which we can see passing over the stomach. This patient shows a definite deformity, and we have the other signs, so that we have enough evidence to justify us in making a diagnosis of tumor of the stomach. A lesion at the fundus is almost invariably carcinoma. You do not get ulcer in that region. There are very few benign lesions to consider. In fact I cannot recall a single lesion in that region that was not cancer.

Dr. Cabot: Working with one or another radiologist one gets used to the different temperaments. Dr. Holmes is a particularly conservative man. In all the years we have been working together never

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have I heard him commit himself so emphatically. I cannot help but be strongly moved.

"Liver edge not definitely felt, but resistance was noted in the areas shown in the diagram." Of course with a diagnosis which we suspect strongly of being carcinoma of the stomach we are thinking of metastases in the liver.

The dyspnea on exertion is interesting, because we are so apt to associate that with heart and lung disease, although we see many cases here where it is not associated with any disease of the thorax, many cases with high diaphragm or tumor below the diaphragm, raising it, and a good many cases which we cannot explain at all.

#### NOTES ON THE PHYSICAL EXAMINATION

I do not yet know why his fingers were clubbed. There is nothing extraordinary about the urine examination. We cannot construct any particular lesion in the kidney out of that.

The blood shows a slight secondary anemia with leukocytosis.

From the x-ray examination that could not be syphilis of the stomach, could it?

Dr. Holmes: I do not believe so.

Dr. Cabot: So that what you would expect to see if there was a cancer is present in the stomach examination. Excluding rare meat diet and hemorrhoids that guaiac is suggestive of an oozing carcinoma higher up.

Dr. Holmes: This is the left chest. The diaphragm is distinctly higher on the left. There are a number of things that can give high diaphragm on that side, among them carcinoma of the fundus of the stomach and tumor immediately below the diaphragm. But high diaphragm is very common when there is nothing wrong. A patient who has just eaten will have a high diaphragm on the left side. Anything that interferes with the passage of air into the lung will cause a high diaphragm. There is nothing in this patient's chest, nothing in the lung or bronchus to suggest such a condition. Our interpretation would be that he had something below the diaphragm pushing it up or that he had taken food just before the plate was made.

In the x-ray of the kidney there is a suggestion of a shadow in this area. There was some question at that time as to whether that was a stone in the lower pole of the kidney or whether it was an artefact. By artefacts we mean shadows produced by substances on the skin or due to some error in the dark room. It is hard to say, but I think that is an artefact. There is something about it that suggests it.

Then he had a catheter inserted. The right kidney is considerably lower than the left, I think perhaps a little more than normally, and the shadow which we saw in the previous plates is not visible in this, at least in this light. So that that would rule it out as being a stone and place it definitely in the category of artefact.

Dr. Cabot: So we find nothing to trace to the kidneys. In connection with the dysuria remember the leukocytes and blood which we noticed in the urinary sediment. In spite of many complaints which we do not satisfactorily account for, and although there is some blood and pus in the urine, we do not seem to have any sufficient evidence to condemn the kidney.

Dr. Edward L. Young, Jr.: He had, following this, temperature and costovertebral tenderness. I think it is true that pyelitis is often made to take the blame when temperature is not otherwise explained, and I think there is often unwarranted curiosity on the part of all of us to find out the why and wherefore. It seems to me that even if

that was a stone we took the chance of stirring up the kidneys by cystoscopy.

From May 20 to the fourth of June is a very long time for it to take a case of infection in the kidney to develop. In a coccus infection you will get the cocci in the urine, but you may get a grossly clear urine. But even May 20 to June 4 is a long time for that to stay clear. I should question somewhat whether there had been some pyelitis present.

Dr. Cabot I will read to the end and then we will try to get Dr. Young to commit himself on what was found in the kidney.

The chart shows that the temperature was constantly elevated throughout his whole stay here. He had never had a steady normal temperature from the time he entered until he died. It was very much higher in the last few days, but it reached 102° nearly every two hours for two weeks. So we ought to find something else besides cancer of the stomach.

#### DIFFERENTIAL DIAGNOSIS

I am not going back of the reasoning which Dr. Holmes brought before you in relation to cancer at the fundus of the stomach. He thinks it may possibly involve the esophagus too, but we have had no dysphagia or other swallowing symptoms. There is nothing in the rest of the examination that at all points away from cancer. There is an achylia. There are no gastric symptoms characteristic of gastric cancer, but any gastric symptoms that you can name are consistent with it. I do not think however that cancer is going to account for everything that Dr. Mallory is going to tell us. I think our chief business is to make some guesses as to what terminal infection the patient had. Could he have had a terminal infection in or about that cancer with a local peritonitis? I think not. There is not enough local disturbance in the way of spasm

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and pain, and there is nothing sudden in the onset of symptoms to warrant that diagnosis.

What are we to make from this streptococcus viridans? We suspect that he has an endocarditis. I do not see how we can rule out a vegetative endocarditis, a malignant endocarditis. He has also a systolic murmur. That is all he needs to have. It is enough to justify suspicion of that diagnosis. But we have no evidence of embolism unless these kidney symptoms may be taken as embolic.

Has he a renal suppuration, a suppurative nephritis, localized or diffuse, with pyelitis? I am not at all prepared to say that he has not. I can not make any better guess than that he has. I do not see anything else that is suggestive of other localization of inflammatory process except the heart (by the culture) and the kidney by the evidence that Dr. Young has just gone over with you. I think Dr. Mallory will not find a long-standing bacterial endocarditis, though I cannot exclude it. But something in the kidney, in the pelvis of the kidney, or in both seems on the whole more probable.

Dr. Young, would you like to commit yourself?

Dr. Young: I should like to say that when I was talking I did not get down to the streptococcus viridans. Of course that would mean a cortical lesion, and it is true that cortical lesions of the kidney may be present and very little may show in the examination of the urine. But that is not the common thing. There is generally persistent and marked tenderness in the costovertebral angle, and that generally increases with the onset of perinephritic

infection. I wish they had taken a culture of the urine to tell us whether it was streptococcus there also. I believe, however, that Dr. Mallory will tell us that the kidneys are not infected as a primary cause of this condition, although I cannot say they may not be, any more than you can rule out the heart.

Dr. Cabot: You agree that we have to say something more than cancer of the stomach?

Dr. Young: I agree to that, and I think it is most likely to be one of those two things.

#### DR. CABOT'S DIAGNOSIS

Cancer of the stomach.

Acute endocarditis?

Suppurative nephritis or pyelitis or both.

#### DR. TRACY B. MALLORY ANATOMIC DIAGNOSES

1. Primary disease.
- Carcinoma of the stomach with perforation.
2. Secondary or terminal lesions.
- Multiple polyps of the stomach.
- Metastases to both adrenals.
- Abscess adjacent to hilus of spleen.
3. Historical landmarks.
- Chronic cystitis and pyelitis.
- Cystitis cystica.

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polyp. The other tumor at its edges had the structure of a benign polyp, at the center the structure of a rapidly growing undifferentiated carcinoma. I think there is no question that cancer developed from one of the two polyps present in the stomach. If he had been caught a year or so previously they might have found only two benign polyps, I think. In the center of the carcinoma a small perforation had occurred and a small abscess was found lying between the fundus of the stomach and the hilus of the spleen. This was sharply localized. There was no generalized peritonitis. The tumor did not extend into the esophagus. It had invaded the left dome of the diaphragm over a wide area nearly ten centimeters in diameter, and large tumor nodules projected from the pleural surface of the diaphragm. I believe they might have shown in the x-ray plate if there had not been a moderate amount of fluid in the left chest.

The kidneys showed an apparently mild degree of pyelitis with very little involvement of the renal parenchyma.

A slight degree of bronchopneumonia was present and probably accounted at least in part for the terminal rise in temperature.

Metastases were found only in the adrenal glands. Both glands were involved and apparently completely destroyed. No trace of adrenal parenchyma could be demonstrated at post mortem examination.

Dr. Cabot: It is very interesting, that last point. A man can have normal blood pressure and no evidence of Addison's disease when both adrenals are diseased. It is not the first time I have heard it, but it always surprises me afresh. I suppose it means that the essential part of the organ is still intact.

We had three infections at the end, the abscess and perforation of the cancer in the stomach and spleen, the mild pyelitis and the bronchopneumonia.

—A Baker Institute "Diagnosis."—The history of every quack concern that professes to cure cancer is monotonously alike. The scheme consists in diagnosing every simple skin lesion, no matter how benign, as cancer. Caustics are then applied and a hole eaten in the tissues with inevitable disfigurement and the patient finally sent back home "cured." Of course occasionally the quacks get real cases of malignant disease. Most of these are sent back home in time to avoid the necessity of the "institute" having to sign the death certificate. A recent case is of interest in that the victim showed more intelligence than is frequently displayed and thus saved himself considerable suffering and disfigurement. Mr. I., an Iowa farmer, developed a lesion on the chin that worried him. He went to Muscatine to the Baker Institute where he was "examined." Mr. I. reports that he was told that he had cancer of the chin and would have to pay two hundred and fifty dollars and also sixty dollars a week hospital charges for four to six weeks. The Baker Institute, according to the victim, applied their cancer remedy. Then the young man got to thinking and decided that the Iowa State University was not far away and that they probably knew as much about cancer as Mr. Baker and his "institute." He went to the College of Medicine of the state University of Iowa where the dermatologic department diagnosed the lesion as *Tinea barbae*. Treatment for ringworm of the beard was instituted and in less than two weeks the young man went home. (Jour. A. M. A., July 26, 1930, p. 285.)

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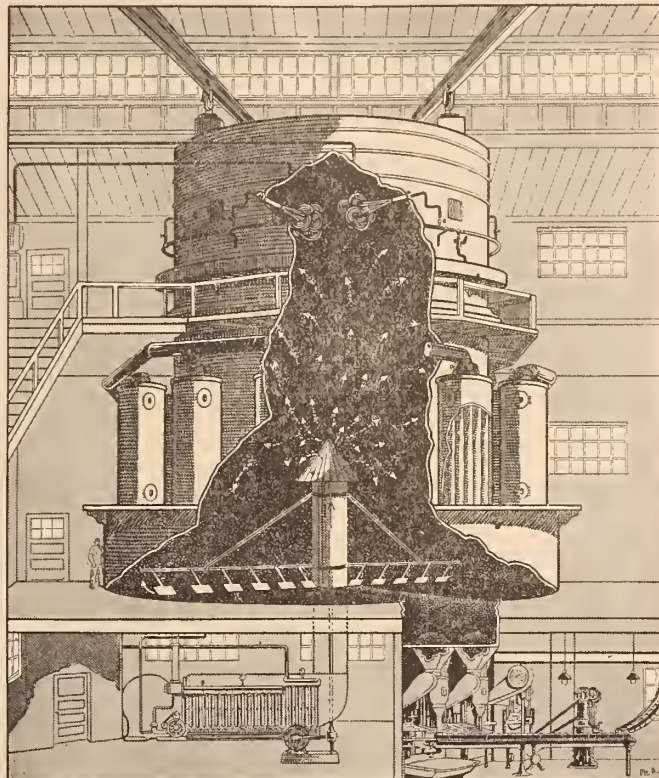
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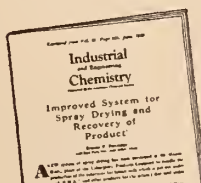
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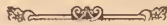
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Volume XIV

NOVEMBER, 1930

No. 11

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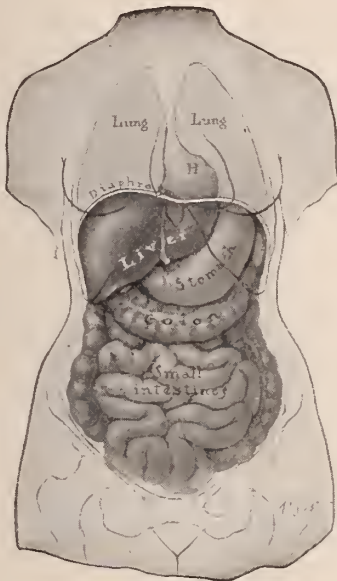


Figure A



Figure B

## POSITION AND RELATIONSHIP OF THE VISCERA IN THE FEMALE

Figure A — Normal female figure.

Figure B—Visceroptosis (abdominal ptosis, Glenard's disease, enteroptosis); position of colon, lying behind the stomach, indicated by dotted line.

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**SPINACH SALAD** (Six Servings)

	Grams	Prot.	Fat	Carb.	Cal.
1½ tablespoons Knox Sparkling Gelatine.....	10	9	....	....	....
¼ cup cold water.....	....	....	....	....	....
1¼ cups boiling water.....	....	....	....	....	....
2 tablespoons lemon juice.....	20	....	....	2	....
½ teaspoon salt.....	....	....	....	....	....
1½ cups cooked spinach, chopped.....	300	6	....	7	....
2 hard cooked eggs.....	100	13	10.5	....	....
<b>Total</b> .....	<b>28</b>	<b>10.5</b>	<b>9</b>	<b>242.5</b>	
<b>One serving</b> .....	<b>5</b>	<b>2</b>	<b>1.5</b>	<b>40</b>	

Soak gelatine in cold water and dissolve in boiling water. Add lemon juice, salt, strain and chill. When nearly set, stir in chopped spinach, mold and chill until firm. Serve on lettuce hearts or tender chicory leaves and garnish with hard cooked egg, cut lengthwise in sixths and sprinkled with paprika. Serve with mayonnaise.

# RECIPES LIKE THESE HELP DIABETIC PATIENTS KEEP THEIR DIETS AND THEIR APPETITES

EVERY physician knows the difficulty of diet control in diabetes—and will appreciate the value of Knox Sparkling Gelatine in dispelling monotony and arousing appetite without disturbing the purpose or the balance of the diet in the slightest degree.

The two recipes on this page show how perfectly Knox Gelatine fits into the diabetic diet. Where small quantities of vegetables, meat or fish are necessary, satisfying bulk may be supplied with Knox Gelatine, which combines perfectly with these essential foods, making them more attractive to the eye and continuously delightful to the taste.

With Knox Gelatine, a different dish may be served every day from the basic foods of the diabetic diet. We would like to send every physician a booklet on "Diet in the Treatment of Diabetes"

**WINTER SALAD** (Six Servings)

	Grams	Prot.	Fat	Carb.	Cal.
2 teaspoons Knox Sparkling Gelatine.....	4.5	4	....	....	....
¼ cup cold water.....	....	....	....	....	....
½ cup hot water.....	....	....	....	....	....
½ teaspoon salt.....	....	....	....	....	....
¼ cup vinegar.....	....	....	....	....	....
1½ cups grated cheese.....	150	43	54	....	....
½ cup chopped stuffed olives.....	70	1	19	8	....
½ cup chopped celery.....	60	1	....	2	....
¼ cup chopped green pepper.....	25	....	....	1	....
½ cup cream, whipped.....	75	2	30	2	....
<b>Total</b> .....	<b>51</b>	<b>103</b>	<b>13</b>	<b>1183</b>	
<b>One serving</b> .....	<b>8.5</b>	<b>17</b>	<b>2</b>	<b>197</b>	

Soak gelatine in cold water. Bring hot water and salt to boil and dissolve gelatine in it. Add vinegar and set aside to chill. When nearly set, beat until frothy, fold in cheese, olives, celery, pepper and whipped cream. Turn into molds and chill until firm. Unmold on lettuce leaf and serve.

by a widely known dietetic authority. This treatise presents many new ideas and recipes in the preparation of beneficial diabetic diets. It is of such character that it may be placed in the hands of any patient with the assurance that it will act as a safe diet control, and at the same time make the patient as happy with his food as though he were not on a diet. This booklet will be sent in any quantity, to supply the diabetic patients of any physician who will mail the coupon.

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OF THE SOUTHWEST

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## "OUR ASSOCIATION"

(Address of the President, before the Sixteenth Annual Session of the Medical and Surgical Association of the Southwest, held at El Paso, Texas, November 6, 7 and 8, 1930.)

E. PAYNE PALMER, M. D., F. A. C. S.  
Phoenix, Arizona

Dr. Gallagher, honored guests and members of our Association: I appreciate the honor you have bestowed upon me more than I can find words to express. To have practiced medicine in this great Southwest for more than thirty years, to have known many of its prominent citizens and practically all of its medical profession who have resided here during that time, is to have enjoyed a privileged life. And, finally, to be given the highest honor that the medical profession of this district can bestow, fills me with joy which passeth all understanding. At the end of my term of office I hope that you will feel toward me the same as a group of Arizona cowboys felt toward one of their departed brothers. They wished to place an appropriate epitaph upon his tombstone. The following was decided upon: "He did his damndest, angels could do no more."

There is no better body of doctors in all the world than the members of our Association, but we must not be self-satisfied. In our opinion the Southwest is the most desirable section in the world in which to live; let's work to make it the best in which to practice our profession.

This Association was organized to secure representative membership from among the medical profession of the Southwest, to promote good will and elevate the standard of our medical work through stimulation of our members by means of our annual meetings and our journal. No doubt the attainments of the Association far exceed the ex-

pectations of the organizers, yet there is much work left for the future.

Our future function is to increase our membership until we have all the eligible doctors in our district, to strive to create good will in our profession, to present a continuous pageant of the medical facilities of our district, of our own special work, of our own hospitals, sanatoria and laboratories, and to make our own journal the very best possible.

In our geographical district there are more than one thousand doctors. We have about three hundred members. This is not a large enough representation: we should have a much larger membership. We must reach out and bring into our Association other men in our district. Every eligible doctor in the Southwest should have a personal invitation to join our Association. He should be shown the advantages of membership. These invitations should be sent out from the president's office, and a follow-up system instituted. Every year this should be repeated. Each member should appoint himself a committee of one to get new members. While we need the prospective members, they also need that which our Association has to offer to them. Doctors living in the Southwest, who are eligible to membership in our Association and who do not embrace the privilege, are losing a life's treasure which can only be appreciated by our members who are regular attendants at our annual meetings.

Some great philosopher has said that good will is the greatest practical force in the universe. When angels announced the birth of a Savior, the theme of their great celestial overture was: "Good will to men." Good will among our members must be cultivated and cherished as one of our greatest assets. Good will is largely a matter of personal attitude. Every member of our As-



sociation has an individual responsibility. He must refrain from doing things that would give offense and he must do things which will actually increase that good will, make it stronger, finer, more lasting. No doctor should consider himself independent of his professional neighbors. Their problems are the same and it is only by cooperation and good will that they can enjoy their work and be able to carry it on to the best advantage of their patients and themselves. It is impossible to measure the benefits of good will in dollars and cents. Good will benefits have many ramifications. They are reflected in the better feeling that prevails between the doctor and his patient. The satisfaction of good will among one's professional associates is a thing worth working for. Think of the great difference between meeting a doctor with whom you are friendly and one towards whom you hold a grudge.

"We build our future, thought by thought,  
Or good or bad, and know it not—  
Thought is another name for fate,  
Choose then, thy destiny, and wait—  
For love brings love, and hate brings hate."

In order to do better work we must have good hospitals to work in and that means approved hospitals. The percentage of approved hospitals in the Southwest is much smaller than it should be. Every government hospital is fully approved. There is no reason why every hospital in our district should not work for standardization and finally be approved. Our members should take individual and group interest and action in a campaign to have our hospitals on the approved list of the American College of Surgeons. We should urge the hospital standardization movement upon the governing body or trustees of all of our hospitals and cooperate with them to obtain the goal. We should be more active in the administration of our hospitals. The doctors should not only carry on the clinical or scientific work of the institution, but should act in an advisory capacity, assisting in the administration of the hospital. The advisory members and the governing body should meet frequently to discuss matters of mutual interest and formulate policies.

We should attend the staff conferences regularly in order to have intelligent discussion of the clinical work. A good staff conference will result in many advantages to the patient, the doctor, the hospital and the community at large. We should give the time to prepare good records on each patient treated in the hospital. Failure of our doctors to attend staff conferences and prepare proper records has helped to keep many of our hospitals off the approved list.

A standardized hospital is a modern physical plant free from hazards inimical to patients' welfare and safety, properly furnished and equipped for the comfort and scientific care of the patient. A patient entering an approved hospital is assured of obtaining competent medical care. The standard recognized the world over requires that only full graduates of medicine, in good standing, and legally licensed to practice in their respective states, competent in their respective fields, and worthy in character and in matters of professional ethics, should be extended the privileges of the approved hospital.

It is a serious matter for any hospital today to exist without approval or recognition. If the public understood hospital standardization they would demand that every hospital be on the Approved List of the American College of Surgeons. If a community cannot have a well regulated hospital complying with the present day, universally recognized standards, then better not have an institution of this kind at all. Every hospital must be so operated as to assure the public that they can obtain adequate, skillful, and responsible medical care.

The standardized hospital also offers great advantages to the doctor. It assures him of suitable accommodation for his patients; of adequate diagnosis and therapeutic facilities for the study, diagnosis and treatment of patients under competent supervision; of competent personnel and efficient organization. The satisfaction of working in such an institution repays us for all of our labors and assures us of contact with only the best members of our profession.

Malignant tumor management requires our careful consideration. Every hospital of any size, or at least every community should establish a tumor clinic for the diagnosis and therapeutic disposal of its malignant cases. The personnel of the tumor clinic should include one or more of the medical, surgical, pathological, and radiological members of the staff or community. These members should be selected because of special qualification, experience and interest in the subject. The tumor clinic should be available for consultation with any ethical member of our profession without cost to the patient. An adequate record system and classification based on that of the American College of Surgeons or its equal, with a follow-up system will produce invaluable data.

Fracture management should occupy a most important place in the hospital and community. All hospitals should be equip-

ped to properly care for fracture patients. They should have a moderate number of standard splints of suitable sizes; plaster of Paris, bandages, adhesive plaster, felt, sheet wadding, pulleys, rope and weights, in a splint room that is **open at all hours**, so that the fracture cases admitted to the hospital may be cared for immediately. Ambulance attendants and nurses should be given lessons in first aid handling of fractures. One or more surgeons who are well equipped as a result of training, experience and mechanical ability, and with personal interest in the subject should be made responsible for the supervision of the care of fractures in our hospitals, to assure the hospital and the fracture patient of some uniformity in the standard excellence in the treatment of fractures, working of course, with the doctor in charge of the patient. This will in no way interfere with the relation of the doctor and the patient. A systematic follow-up should be maintained in all fracture cases discharged from the hospital to determine the end results.

Obstetrical patients in the hospital should also occupy our attention. In looking up statistics one is impressed with our failure to reduce the mortality of the mother and child. There should be a properly organized and equipped department of obstetrics providing adequate accommodation for patients and new-born, and arrangements providing for complete segregation of these patients from all others. One or more obstetricians who are particularly fitted by training and experience should have supervision over all obstetrical cases in the hospital, see to it that normal cases are not interfered with, that they be given time for normal deliveries, that the incidence of obstetrical operative procedure be reduced to the minimum, and then that it be properly performed.

Nursing offers the greatest variety of vocation of all professions open to women and the opportunities for advancement are limitless. The demand for the trained nurse is greater than the supply. We depend upon nurses for assistance in practically all of our work. There are many good training schools for nurses in our district. We should take an active part in the teaching staff of our training schools and in our daily life be on the lookout for young women who are particularly adapted for students of nursing, and advise them to enter training in some of our schools of nursing.

Autopsies in cases of hospital deaths are necessary to fulfill a moral obligation to our dead. The doctor who treated the patient when alive agreed to devote his knowledge

and skill to diagnosing and treating correctly. The hospital assumes responsibility for all the acts of the members of the hospital organization when it accepts and agrees to care for the patient. In case of death the hospital should immediately inquire into all the facts surrounding the care of the patient when alive, and make an effort to obtain an autopsy. The hospital is under a definite debt to humanity to obtain all of the information possible. A careful post-mortem examination and a thorough study and interpretation of the findings by a trained and competent pathologist will be the only way of completing the inquiry and the hospital record of the case. The family or friends should be informed of all the findings. Autopsies will be obtained in a large proportion of cases when a sincere effort is made to secure permission for the examination. Our members should agree to cooperate in whatever system is established by the hospital to secure permission for the post-mortem examination. Every post-mortem should be carried on quietly and reverently and the greatest respect should be shown the dead during examination. Failure to obtain a sufficient percentage of autopsies has kept some of our hospitals from being approved for interns.

Southwestern Medicine came into being through the instrumentality of this Association. In 1915, feeling the need of an organ for the presentation of the medical activities of the Southwest, members of this Association succeeded in securing the cooperation of the state associations of Arizona and New Mexico, both of whom had their own medical journals, and of the El Paso County Medical Society which had its Bulletin. The result of this cooperation was the establishment of Southwestern Medicine as the official publication for all four organizations. The first issue appeared in January, 1917, and it has now almost completed its fourteenth year. It has grown in size and influence until it now ranks high among the official medical journals of the country.

Inasmuch as each member of the other three organizations receives his journal by virtue of that membership, the two dollars per member paid the journal from this Association is a subsidy, and this subsidy is what has permitted the development of the journal into its present substantial position. That subsidy is applied toward supplying illustrations, toward extra expenses of publication and mailing, toward expenses of the editor's office. I am informed by the editor that the journal is at its limit of expansion in size, until further income is secured, either from advertising or from the organiza-



tions interested. It is a question in his mind whether it is desirable to tax the medical profession of the Southwest further, for the enlargement of the journal. However, I think that we can well afford to supply the journal with additional funds both for its enlargement and for the expenses of the editor's office. At the present time, of the dues from this Association (\$3.00) two dollars goes to the journal and one dollar per member, or approximately \$300.00 to the secretary of this Association. That is paid out for clerical help, as I am told by the secretary that he pays \$25.00 a month for part time clerical assistance to take care of the business of this Association. That takes all dues from our 300 members, leaving nothing for the expenses of the annual meeting, such as programs, reporter, advertising material, postage, etc. The result of this is that this Association is constantly in debt to the journal, inasmuch as a part of the funds intended as a subsidy to the journal are constantly being used to further the work of this Association.

I would propose that we raise the dues of this Association to \$5.00 a year, to be divided equally between the secretary's office for expenses of the Association, and the journal for a subsidy.

I suggest that we make this year's type of program permanent with improvements each year. That the evening meeting of the first day be known as the "Presidential Meeting," that the President hold office until after he delivers the "Address of Retiring President," and that the President-elect take office after his "Inaugural Address."

We must be determined and strong in will.  
Strive to find ways to attain the end.  
Not to yield until our task is done.  
Only then can we rest in peace.

## THE TREATMENT OF DIABETES

FRANK N. ALLAN, M. D.

Division of Medicine, The Mayo Clinic,  
Rochester, Minnesota.

(Read before the meeting of the New Mexico State Medical Society, Raton, N. M., June 4, 1930.)

It is astonishing to find that, in spite of modern methods of treatment and in spite of the effective therapeutic agent now available in insulin, the mortality from diabetes appears to be practically unchanged, or, according to certain reports published by the Metropolitan Life Insurance Company, even higher than before. This fact seems to be in contradiction to the experience of everyone who has seen patients with severe diabetes kept alive and well, when death would have been inevitable in former years. There are certain facts which may partly explain

this disagreement. First, more and more cases of diabetes are reported each decade. This may be partly due to the fact that diabetes is discovered more frequently now because examinations of urine are in the routine of practice now more than formerly. Second, the death of a diabetic patient may be attributed to diabetes even when some other condition was the primary cause of death. This is especially likely to be true of older patients. Unless death occurs from some acute illness or accident, diabetes may be credited with the fatality even when it is not responsible. Third, analysis of the mortality in different age groups shows that there has been decided reduction in the number of deaths of children and young adults, which is overbalanced in the total death rate by a large increase in the deaths of older patients. The latter, of course, can be expected as a natural occurrence, since more persons should arrive at the older ages to increase the number of deaths credited to diabetes. The decrease in the death rate of younger persons is gratifying; yet this decrease is small. Even when allowance is made for all factors which may distort the significance of mortality statistics, the fact remains that deaths from diabetes still occur at an appalling rate, although the means of controlling the disease are specific and almost infallible.

Before the discovery of insulin, most patients with diabetes died in coma. The studies made by the Statistical Bureau of the Metropolitan Life Insurance Company show that fewer deaths are now occurring from this cause. In 1925, coma was present as a terminal condition in forty-eight per cent of the fatal cases of diabetes; in a study made early in 1929, it was present in only forty-one per cent of the cases, and in a series studied more recently the incidence of coma had declined to thirty-seven per cent. This decrease is encouraging, but when one knows that coma is preventable and that, if patients are treated in time, they can be brought out of this state, such a report indicates needless loss of life. Even when fatal outcome is avoided, diabetes which is neglected or ineffectually treated is responsible for invalidism and disability, and contributes to serious complications. Such a situation as has been outlined is a challenge to the medical profession. The conclusion might be drawn that a large percentage of diabetic patients fail to receive adequate treatment. There is much evidence to support such an opinion. There can be no doubt that many physicians feel helpless in dealing with diabetes. The busy practitioner often lacks the time needed for the constant

supervision of this chronic illness, when demands are made continuously for attention to more urgent conditions. Many physicians have difficulty in giving satisfactory dietary instruction. Probably many fail to use insulin when it is needed through fear of hypoglycemia, and when they do employ it, they may give it in inadequate doses.

The report of the Metropolitan Life Insurance Company on the use of insulin is illuminating. In a survey of fatal cases in 1924 and 1925, it was found that only forty-nine per cent of the patients were given insulin, and that of these more than half were given treatment only during the last months before death. The use of insulin has been increasing somewhat, and in the early part of 1929 it was used in sixty-three per cent of fatal cases. Even in the cases in which coma occurred, insulin was used in less than sixty per cent in the earlier series; in 1929 it was used in seventy-three per cent. It is shocking to think that even now more than a fourth of these patients are allowed to die in coma without any attempt at treatment with the remedy which is specific.

There are two reasons for the poor and ineffective treatment of diabetes: to the apparent complexity of treatment with diet and insulin is added the lack of agreement in the methods advocated by different authorities. The technic of treatment has been unnecessarily complicated. Much of the confusion and uncertainty regarding the procedures best to employ can be eliminated by thorough understanding of the aims and objects of treatment.

The main object in the treatment of diabetes is the maintenance of good nutrition, so that the patient may feel well and strong. Also, the treatment should protect him from the occurrence of complications and must be planned to prevent progress of the disease and encourage recovery if possible. Treatment may be considered successful if the patient feels well, the desired weight is held, and the urine is kept sugar-free. To achieve these objects dietary measures are always necessary. Treatment by insulin does not take the place of dieting but supplements it. Sometimes insulin is used with little, if any, care of the diet. Everyone who has had much experience with diabetes agrees that such practice is always unwise and often dangerous. Without thorough treatment of the disease to keep the urine sugar-free, patients rarely have full strength and vitality, although there are some who may have tolerable health. Besides, the disease is likely to progress to the severest degree; there is susceptibility to complications, and the dan-

gers of coma and severe hypoglycemia are a source of anxiety. Almost all deaths of patients treated with insulin occur when insulin is used without adequate dietary treatment.

Insulin has proved to be a remarkable remedy for diabetes. It saves life and maintains health in cases in which, without treatment, there would be no hope. Yet there are difficulties and drawbacks in connection with treatment by insulin which make it desirable to avoid it if possible. Insulin must be administered by hypodermic injections two or three times daily; the dosage must be balanced with the diet to control glycosuria and to avoid hypoglycemic reactions. To administer insulin is irksome and troublesome and, although this regimen cannot be considered a hardship when life and death depend on it, most patients prefer to get along without it if possible. Fortunately diet alone will control diabetes in more than half the cases.

Attention to simple general rules is sufficient to control diabetes if the disease is very mild. The patient with mild diabetes can get along satisfactorily if he avoids overeating in general, if he lives without sugar and if he limits his intake of foods rich in starch and sugar. But the patient with diabetes which is at all severe must have systematic dietary treatment. The patient must know not only what food to avoid but must know the kind and quantity which he should take. Dieting of any kind is likely should take. Dieting of any kind is likely to be troublesome, unpleasant and monotonous, but these difficulties can be eliminated or reduced if the patient is given adequate instruction.

Physicians often complain that patients will not submit to dieting. This is sometimes true. Older persons, especially, find it hard to change the food habits of a lifetime. However, in many cases the trouble is not with the patient but with the physician. If the patient receives indefinite instruction, he is bound to be bewildered three times a day when he sits down to eat. When haphazard treatment fails to improve his condition and fails to check glycosuria, he naturally feels that dieting is not worth the trouble. Training of the patient in systematic dieting overcomes these objections and makes for success.

Methods used in dieting for diabetes have gone through a long process of evolution. Before the discovery of insulin, restriction of the diet was the only means of dealing with the disease. It was necessary to restrict the sugar-forming material of the diet to the minimum, depending on fat as



the main source of energy, while balancing glucose and fatty acid to avoid ketosis. Diets can be planned in this way to control diabetes without insulin except in a relatively small percentage of cases, and insulin, when required, is then used in small doses. An advantage in employing such a diet is that complete control of the disease usually can be obtained more easily. However, the patient must be assured of an amount of food which will satisfy him as well as maintain good nutrition. Drastic restriction of the diet therefore is being abandoned.

Insulin permits great liberty in dietary treatment, and methods which are entirely different from those formerly employed are being advocated. Carbohydrate is given by some in an amount corresponding to that used by normal persons, and insulin is given in large doses to permit its utilization. There are objections to such a practice; it is more difficult to control diabetes thoroughly; it is more difficult to check glycosuria; severe hypoglycemic reactions are feared; large doses are usually required, although sometimes the amount of insulin needed is comparatively small, and the expense of large amounts of insulin is an important consideration for many patients.

In general it seems desirable to avoid extremes. With an allowance of seventy to one hundred grams of carbohydrate, and fifty to sixty grams of protein, one can provide the ordinary patient with a satisfying amount of food. The remainder of the nourishment required can be provided in the form of fat. It has been suggested that fat in the diet in large amounts may be harmful, but there is no convincing evidence to support this. Diets planned in this way permit control of the disease without insulin except in less than half the cases. Insulin, when required, is used in small doses. There is seldom need for more than forty units daily so that the expense is not a serious matter.

The treatment must always be planned to suit the individual case. One must consider the type of diabetes and the age of the patient. Even when diabetes appears mild in a young person, strict treatment must be continued for a year at least before the regimen can be relaxed. Insulin is usually needed for control of diabetes in children. Even when it is not needed at the beginning of treatment, the parents should always be trained to use it so that they can begin treatment promptly if glycosuria should return. Unless juvenile diabetes is watched closely it may quickly lead to acidosis. On the other hand, the diabetes of an elderly, obese person, which appears severe on ac-

count of intense glycosuria, may become mild and may respond to simple dietary treatment.

The chief difficulty in treatment with insulin is the need of balancing the dose of insulin with the diet to keep the urine sugar-free, and the fact that the requirement may change considerably. At the beginning, the physician must determine how much insulin is required, but the patient should be prepared to alter the dose if any sudden change takes place in his condition when he is not under the physician's direct observation. There are two features which may indicate to the patient that the dose should be altered. The appearance of glycosuria indicates that the dose should be increased, and the occurrence of hypoglycemic symptoms, that it should be decreased. For adults the dose may be changed five units as a trial step; for children, smaller changes, one to three units, may be made.

A patient who is using insulin should be trusted to change the dose when necessary, but he should not discontinue treatment without medical advice. In fact, patients should be warned never to omit the regular injections unless they have been advised that it is safe to do so. In cases of severe diabetes, acidosis may develop quickly if even one injection is omitted. If a patient is obliged to miss a meal, the injection of insulin may usually be omitted, but only if the urine is sugar-free. If there is glycosuria, there may be danger in going without insulin even if no food is taken.

The changes which take place in the requirement for insulin depend on various factors. If the urine is kept sugar-free constantly, there is often a tendency to recovery of pancreatic function, shown by the occurrence of insulin reactions. Physical exercise is likely to diminish the need for insulin, and insulin reactions indicate that the dosage must be reduced. On the other hand, the occurrence of complications, nervous strain, or shock is likely to affect diabetes unfavorably, so that more insulin must be used.

The treatment of diabetes under ordinary circumstances is usually simple once a suitable regimen has been established. If, however, complications such as infections or hyperthyroidism occur, there may be trouble unless definite precautions are taken. Under such circumstances, the most important point in treatment is to give enough insulin. The need for insulin may be increased enormously, and a dose which is adequate under ordinary circumstances may become relatively ineffective. In cases of mild diabetes which are being controlled

simply by dieting, insulin may be required during sickness. If there is glycosuria, insulin should be used to be safe. The amount required cannot be predicted, but one can be guided by tests of the urine for sugar, made at least four times daily. A test should be made before each injection; if the result is positive, the dosage should be increased five units or more. The mistake of omitting injections of insulin is often made, particularly if there is loss of appetite or a gastric disturbance which prevents the patient from eating his regular meals. This difficulty may be overcome by having the patient provided beforehand with a special plan of diet for use in case of sickness. This diet can be arranged so that the requirement of insulin will be approximately the same as that with the regular diet. There will then be no need for a change in the dose of insulin unless the sickness increases the requirement. If the patient is unable to eat, the injections of insulin should not be omitted if the urine contains sugar. Half of the regular dose may be given and adjustment made by trial.

A difficulty which is not uncommon in the course of treatment with insulin is irritation of the skin at the site of injection. Fortunately, this is seldom serious, but the burning and itching are annoying. In rare cases there is generalized urticaria or dermatitis. The trouble is usually due to specific hypersensitiveness of the patient to the insulin derived from a certain species of animal. Insulin on the market is prepared from the pancreas of either hogs or cattle. A person who is hypersensitive to one is seldom hypersensitive to the other, so that the irritation of the skin can be avoided by changing the type of insulin. There are a few persons who are hypersensitive to all types of insulin, and the treatment in these cases, when the condition is severe enough to demand insulin, is a serious problem.

Transitory disturbance of vision sometimes occurs at the beginning of treatment. In most cases it is slight, does not cause serious inconvenience, and passes off in a few days. In some cases, however, the vision is impaired so much that the patient fears that he is going blind. An example may be quoted of a patient who had suffered from fairly severe diabetes for three years. When she came to The Mayo Clinic for treatment, she reported that attempts had twice been made to use insulin, but that on each occasion it disturbed her vision seriously. Her physicians were alarmed, thought that insulin had a harmful effect on her eyes, and abandoned treatment. As a result she had been obliged to live for three years without treat-

ment and gradually failed in health. If the type of disturbance had been recognized, this patient might have had the benefit of insulin during the years in which she had suffered ill health. The visual change is probably dependent on disturbance in the balance of water and salts in the lens resulting from sudden change in the concentration of sugar in the blood. Change in vision sometimes occurs also at the onset of diabetes and may be the symptom which directs the patient to the physician. These transitory visual disturbances, under both conditions, are simply due to change in refraction, but the change is opposite; at the onset of diabetes the condition is myopic; after treatment it is hyperopic.

Edema is another disturbance occasionally seen at the commencement of treatment with insulin. It occurs most often in cases in which severe diabetes has caused emaciation, if the nutritional status is suddenly changed. Since edema sometimes occurred in cases of severe diabetes before the days of insulin, it may not be justifiable to attribute to insulin edema which occurs under this treatment. The cause is not fully understood. The so-called insulin edema seldom gives any trouble and usually disappears in a short time, if the intake of salt and fluid is restricted. The administration of insulin need not be discontinued. If edema is marked, diuretics such as ammonium nitrate and salyrgan can be used, but they are not often necessary.

Although the constancy of the action of insulin and the prompt results from treatment are spectacular, in rare cases there is failure of insulin to act in the usual way. There is resistance to its action so that it is necessary to use many times the amount required for the ordinary case of severest diabetes. In a case of bronze diabetes seen at The Mayo Clinic, for example, it was necessary to use from 300 to 600 units of insulin daily for many weeks; on one day, the patient was given 1000 units. Since the ordinary case of maximal severity rarely requires more than fifty units with the type of diet employed, the magnitude of this dosage is staggering. Cases which are refractory to insulin are fortunately extremely rare, and the refractory state is usually only temporary. With few exceptions the disease has been successfully controlled with the large amounts of insulin. There is apparently no limit to the amount of insulin which may be required and safely given, so long as hyperglycemia and glycosuria persist. This must be kept in mind, so that when resistance to insulin is encountered, effective treatment may be given.



The hypodermic injection of insulin is dreaded by many patients, and to some it seems intolerable. Attempts have been made repeatedly to find a substitute. Three years ago, hopes were aroused by the introduction of certain oral remedies, but unfortunately the expectations have not been fulfilled. Synthalin, a synthetic drug derived from guanidine, has a definite antidiabetic effect. Yet its action is feeble, and at best it will take the place of only twenty to twenty-five units of insulin. Also, it frequently causes toxic symptoms, anorexia, nausea, vomiting, and malaise, so that it cannot be recommended for general use. Myrtomel, or myrtillin, has not given definite results in the cases in which it was tried at The Mayo Clinic. There is still, therefore, no substitute for injection of insulin.

Coma demands serious consideration, since there are few patients with severe diabetes who have not been imperiled or threatened at some time or other by this serious complication. Coma sometimes occurs soon after the onset of diabetes and has already developed before the patient has sought treatment, or before the disease has been recognized. Hope of preventing such occurrence lies in the further education of the public to seek medical advice early and in the growing custom of making examinations of the urine as a routine. In most cases, coma occurs because some incident has led to neglect or interference with the regular course of treatment. Neglect of dieting, omission of the regular injections of insulin, and lack of care at the time of a complicating illness or an operation are the usual circumstances. These are all conditions which are under the control of the patient or the physician, and attention to one simple rule will cover all situations. If the urine is kept sugar-free, coma will not occur.

If acidosis occurs, treatment should be carried out as soon as possible, before coma develops. Patients should be familiar with the warning symptoms. Coma is almost always preceded by malaise, anorexia, nausea, vomiting and aches and pains in various parts of the body. These symptoms, together or alone, should always lead to the thought of acidosis, although of course they may occur from other causes, and a test of the urine should be made at once. If the urine is sugar-free, one can feel satisfied that the trouble is not due to acidosis; if the urine contains sugar, insulin should be given immediately.

In the treatment of acidosis several factors have to be considered: the toxic effect of the acetone bodies, the disturbance in acid

base equilibrium, and dehydration. Insulin combats all of these changes, so that the most important point in the treatment of acidosis is to give insulin early and in adequate doses. It is impossible to know how much insulin will be required, and the judgment of the physician must be trained. If the symptoms of acidosis are not severe, it is best to give relatively small doses, twenty to thirty units every two to four hours, depending on the tests of blood or urine. The urine at least should be tested before each injection. If the patient is in coma, with profound collapse, so that there seems to be imminent danger of death, larger doses of insulin should be employed, and the injections should be repeated at shorter intervals. When the circulation is failing, insulin may be injected intravenously.

Fluids must be given as freely as possible. If the gastric disturbance prevents fluids being taken by mouth, solution of sodium chloride can be injected subcutaneously, and fluid can be given also by proctoclysis. Warning has been given against the use of intravenous injection of fluid. I have never seen any harmful effect from it but I consider it seldom necessary. Sugar is usually needed since the blood sugar may become subnormal and the urine sometimes becomes sugar-free before the disappearance of the acetone bodies. There is, however, no reason for haste in giving glucose. Attention should be directed first to giving insulin and fluid. If the patient is conscious and if the stomach is not upset, he may be given solution of glucose five per cent by proctoclysis. In cases in which the situation seems critical, solution of glucose ten per cent may be injected intravenously.

The administration of insulin usually results in the rapid combustion of the acetone bodies. The base with which they are combined is released, so that adjustment of the acid-base equilibrium takes place automatically. In some cases recovery is extremely slow, and the danger and harm resulting from prolonged acidosis can be averted by the administration of sodium bicarbonate in reasonable amounts. One may wash out the stomach with solution of sodium bicarbonate five per cent and leave in 200 to 300 c.c. More sodium bicarbonate can be administered in doses of three to four grams every three hours until thirty grams has been given. The possible harm of treatment with alkali has been pointed out, but such a small dose can hardly be harmful, and in certain cases may be of great value.

The successful treatment of diabetes depends, to a large extent, on the patient. It requires close attention to many details,

but is really simple, so simple that intelligent patients can manage it without difficulty year after year. Even those not so intelligent can be taught to care for themselves satisfactorily. In any case, continuous supervision by the physician is essential. One of the important duties of the physician is to build up and maintain a spirit of optimism. A person with diabetes has a chronic defect but it need not be a disability. A patient who is trained and guided by a sympathetic and interested physician can enjoy an active, useful, and happy life.

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### DIAGNOSIS AND TREATMENT OF FRACTURES OF TRANSVERSE PROCESSES OF THE LUMBAR VERTEBRAE

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The majority of the reported cases of isolated fractures of the transverse processes of the lumbar vertebrae result from accidents to industrial workers. This injury is no longer a surgical curiosity. In 1927 Hurdon<sup>1</sup> noted an incidence of nearly four per cent in his study of 941 consecutive back injuries to industrial employees.

Isolated transverse process fractures occur almost exclusively in the lumbar segment of the spine where these processes are relatively long, relatively slender and relatively unprotected. In the cervical region the processes are very short and in the dorsal region the backward bowing of the ribs protects the transverse processes from direct injury. To the lumbar processes are attached segments of the erector spinae muscle group posteriorly, the powerful psoas and diaphragmatic crus anteriorly, and the tips of the processes serve for insertion of the quadratus lumborum.

Most of the reported cases result from direct trauma but there are case histories that unquestionably indicate muscle trac-

tion as the causative agent. Ribs are usually broken by direct force, but not a few have been broken by coughing. If muscle pull in coughing can fracture a rib, who shall say that sudden contraction of the quadratus lumborum may not fracture a transverse process? Exceptionally, as in a case reported by Moore<sup>2</sup>, a process may fracture spontaneously as the result of disease.

Any transverse process may be broken, but the third and fourth suffer most often, because the third is the longest and the fourth is the weakest process. Frequently two or more processes on the same side are broken and bi-lateral fractures of the transverse processes are reported.<sup>3, 4</sup>

Back pain is the only constant symptom of transverse process fracture. This pain need not be so disabling as to compel stopping work. Usually pain is severe. If a single process is broken the pain is localized, but if several processes are injured the pain is diffuse. Referred pain did not occur in my series, all the cases of which were uncomplicated. However, if the kidney is contused or a secondary retro-peritoneal hematoma is present, pain may be referred and the abdominal symptoms overshadow the back symptoms, as in cases of Hoffman, abstracted by Tanton.<sup>5</sup> Rogers<sup>6</sup> and Bauman<sup>7</sup> emphasize the importance of referred pain in the zones of distribution of the nerves of the lumbar and sacral plexuses. The back pain is greatly exaggerated by almost every movement of the trunk. However, there is nothing pathognomonic in the quality of the back pain. There is, likewise, nothing pathognomonic in the attitude assumed by the patient in bed. Some have been more comfortable on the back, and some have lain on the injured side. All have held the thigh sufficiently flexed on the abdomen to relax the psoas muscle.

Physical examination gives only suggestive findings. Even in fresh cases there need be no external signs of injury such as skin discoloration or swelling from hematoma. The process lies too deep to elicit crepitation. An invariable finding is fixed and localized tenderness—the most valuable finding in the diagnosis of fracture anywhere. Though hematoma is present and sensitiveness diffuse, careful examination will always reveal a point or points lateral to the spinous processes where tenderness is acute and these points don't change. If the patient can stand, his posture is often characteristic. The trunk is flexed slightly forward, the weight shifted to the sound side and there is a scoliosis, convexity toward the sound side.



The erector spinae muscles on the injured side are in spasm and all motions of the lumbar spine are limited in range—especially forward flexion and lateral flexion toward the sound side. Though not pathognomonic of transverse process fracture, it is a suggestive sign that the patient can bend toward the injured side with less pain than toward the sound side. Tanton stressed the importance of inducing acute lumbar pain by actively raising the extended leg on the injured side, the patient lying on his back. Where this sign was not positive in the cases here reported, there was definite psoas spasm on the injured side. Of course psoas occurs in many other conditions.

In the differential diagnosis, not only do common diseases of the spine, such as compression fracture of the vertebral bodies and spinal tuberculosis, have to be considered, but diseases of the kidney and of the lungs—especially if the lesion is recent and involves the transverse processes of the upper lumbar vertebrae. Three of my nine cases were referred to me for examination of the urinary tract. All three had acute costomuscular tenderness and one gave, in addition, a history of macroscopic hematuria of several days' duration. Blood was found on microscopic examination of the urinary sediment in a fourth case. Mistakes in diagnosis have been made because of the inability of the patient to breathe deeply because the crura of the diaphragm take origin from transverse processes, and the shallow respiration draws attention to the thoracic organs. If the injury results from a fall or an automobile accident, contusion or rupture of kidney or liver or spleen may complicate the picture. A retroperitoneal hematoma of considerable size can be secondary to the process fracture and, as noted earlier, this complication may give rise to abdominal symptoms. Again, in the late and unrecognized instances of process fracture, the patient has been accused of malingering, as in a case reported by Lange.<sup>8</sup>

But, given a patient with pain in the lumbar region, following injury or muscular exertion, with tenderness sharply defined over one or more transverse processes, think of fracture of a transverse process whether or not there be external signs of trauma.

Such a provisional diagnosis can usually be confirmed by x-ray study and stereoscopic views should be obtained if possible. Inspection of a stereoscopic pair of views intensifies the line of fracture where no displacement exists and shows the plane of displacement where such is present. Bauman, however, reports a case where the

x-ray was reported negative, though clinical signs pointed to fracture, and fracture was proven at operation.

Some care is required to interpret the roentgenograms. On first glance the shadow of the psoas crossing the transverse processes may simulate fracture; a second glance should correct the false impression. Developmental and congenital anomalies may cause real confusion. Un-united epiphyses constitute one development anomaly. "The tips of the transverse processes develop from centers which appear about puberty and fuse about the eighteenth year," according to Piersol's *Anatomy*.<sup>9</sup> Bierman<sup>10</sup> notes that these secondary centers of ossification unite at any time between the sixteenth and twenty-fifth years. The un-united epiphyses give a characteristic picture in that the epiphyseal line lies outside the junction of the middle and outer thirds of the process and is distinctly convex outward. Typically, all the processes will show a similar line. Exceptionally, one epiphysis fails to unite and under this condition error is easy. Fracture lines occur nearer the pedicle and are either oblique or transverse to the long axis of the process. Not infrequently on the x-ray film the line of fracture presents a distinctly serrated appearance instead of the smooth epiphyseal line. Lumbar ribs are another congenital anomaly. Bierman notes this anomaly in from five to ten per cent of all gastro-intestinal patients examined by him over a period of about six months. Fraas<sup>11</sup> quotes Forsell as finding rudimentary ribs in the upper two lumbar vertebrae in seven of two hundred x-rays of the lumbar spine. To the writer an incidence of lumbar ribs in three and one-half per cent of cases seems large. Bierman states, "A lumbar rib should give no difficulty in diagnosis, provided the transverse process on the opposite side is shorter than the transverse process and lumbar rib on the suspicious side."

The treatment of transverse process fractures is not established. One group of surgeons regard the injury as trivial. Kennedy<sup>12</sup> writes: "The disability caused by the injury is due solely to the associated contusion or sprain of the back and the presence of the fracture is negligible as far as prolongation of disability is concerned. Owing to the frequency of traumatic neurosis, it is preferable that knowledge of an existing fracture be kept from the patient." Quaintance<sup>13</sup> concludes: "The duration of disability often is influenced as much by psychic and personality factors and by provisions of the state compensation laws as by the severity of the injury itself, as indicated by phys-

ical examination and roentgen observations." Most surgeons claim good results from conservative treatment. Another group of surgeons regard the injury under discussion as serious. Wilmarth<sup>14</sup> cautions: "Patients with fractures of the transverse processes, undiagnosed and treated as back strain with deep massage and early motions, continue to have pain and frequently are diagnosed as having traumatic neurosis." The latter group, among whom may be mentioned Bauman and Rogers, are radical and advocate and practice removal of the fractured fragments.

Rational treatment should depend on studies of end results and definite statements of end results are very difficult to find. Bony healing does occur. Reports of Rhys<sup>15</sup>, and Skillern<sup>16</sup>, and Brown and Dodd<sup>17</sup>, and Quaintance and Kennedy prove this. In the first two the callus was exuberant and in Skillern's case so exuberant that operation was done to relieve nerve pressure symptoms.

Quaintance admits eighteen per cent non-union but does not state whether bone union or fibrous union occurred in the eighty-two per cent. Quaintance places the average duration of temporary disability in twenty-five uncomplicated cases at slightly more than ten weeks. "None of these patients were permanently disabled and in none was resection of the fractured processes found to be necessary."

In a personal communication, Dr. Atha has reported the average period of disability in thirteen cases treated conservatively at the Minnequa Hospital in Pueblo as 4.9 months. From the reports of Niedlich<sup>18</sup>, Fraas, Ehrlich and Tanton, twenty cases with results on discharge have been studied. In these twenty cases a hospital residence of six weeks under conservative treatment gave a wholly satisfactory result in one-third. One patient is recorded as having pain as long as three years after his discharge. Thomas<sup>19</sup>, reports on seventeen cases treated conservatively. Seven had no disability and the remaining ten were partially disabled, as follows: five had a disability ranging between five and twenty-five per cent, two between twenty-five and fifty per cent, and three between fifty and seventy-five per cent. These results in the transverse process fractures are rather surprising, as most authorities report uniformly good results in such cases."

My own experience indicates the injury is disabling. My series numbers nine. Four were early injuries. Two were treated operatively at once, and one after four years sought relief by operation. One after two

years is unable to ride horseback and play polo without suffering. Two patients had suffered six months before I saw them. Neither submitted to operation and both have twinges of pain now—six months after. Two patients had had backache for a year. One readily consented to operation and has been wholly well. The other was a poor risk, declined operation and was given a total permanent disability rating by the Colorado Industrial Commission, which two years' further observation has proven was warranted. One patient submitted to operation after seven years' backache and has since been well.

The average hospital stay of four of the five cases was twelve days and the average period of disability after operation five weeks. The fifth case was complicated by a surgical accident which delayed convalescence and made a second operation necessary.

The comparison of end results in this small series of nine cases is overwhelmingly in favor of operative treatment. The operation is not difficult. A liberal incision is made over the middle of the erector spinae muscle group and carried through the latissimus dorsi tendon and the lumbar aponeurosis. If the upper three processes are to be attacked the erector spinae group can be retracted inward as in the retracted rectus incision for appendectomy. The transverse processes are then exposed to view and the fracture can be recognized by touch, if not by sight. If the proximal end of the fractured fragment be first raised and the separation from muscles and ligaments be begun at the fracture line, the bone fragment can be skinned out more cleanly and with less danger of injuring nerves that may lie in front of it than if the removal is begun at the apex. The rough fractured surface remaining is smoothed and the hiatus left by removing the distal fragment closed with a chromic catgut stitch or two. The muscle falls back. Closure of the lumbar aponeurosis and tendon of the latissimus dorsi may be made with a running chromic catgut stitch. Closure of the skin margins completes the operation. Surgical attack on the process of the fifth lumbar is not so simple.

Convalescence is usually smooth. Morphine is required for a day or two. I have allowed patients to sit up as soon as they were so inclined—on an average, the fifth day. In a week or ten days they leave the hospital. In a month to six weeks they return to work—even pick and shovel labor.

My patients radically treated have no back pain. Those conservatively treated do have some back pain and have curtailed their ac-



tivities in some respects on this account. Unless complicating injuries make operation unwise, I believe that all cases will be more quickly and more completely cured by radical than by conservative measures. If pain persists after ten weeks conservatism, operation ought to be urged.

### CONCLUSIONS

Fractures of the transverse process of the lumbar vertebrae are fairly common and industrial workers are especially liable to this injury. The injury is disabling.

Pain in the back is the only constant symptom.

Localized tenderness over the fracture site is the only constant sign.

Stereoscopic x-rays should be obtained in suspicious cases but care is necessary in interpreting them.

Operative care of the loose fragment is the treatment of choice because it shortens convalescence and because the end results seem certain and are good. If conservative treatment is chosen, operation should be advised in all patients whose back pain persists after ten weeks.

### CASE REPORTS

Case 1. C. A. J., Jr., 41, referred by Dr. C. Harris, Woodman Sanatorium, for pain in the left loin, thought to be of renal origin. In January, 1921, while playing hockey, fell on another player's skate. Complained at once of severe pain in the left costo-vertebral angle and was confined to bed for a week, during which time opiates were frequently necessary. In January, 1922, he was still having so much back pain that he greedily accepted the possibility of relief by operation, which was done March 16, 1922, and left transverse process of first lumbar removed. He was able to sit up for one and a half hours on the third day. Wound suppurated and pain persisted till sponge was removed September 30. After sponge was removed, was free from old pain and has not since had a recurrence.

Case 2. V. S. B., 19, student. Referred by Dr. W. H. Swain in December, 1923, for pain in right loin, dating back to April or May, 1923, when he was knocked off his bicycle by an automobile. Was in bed only one day. Has not since been able to do any lifting. Horseback riding last fall on two occasions caused recurrence of pain. X-ray right process of fourth and fifth lumbar. Seen in 1929 and still having pain occasionally.

Case 3. K. F. B., 15, student. Referred by Dr. G. B. Gilbert. Seen in January, 1924, for pain in the back "above the waist line." Foot slipped in descending icy steps and she fell on her back against the edge of a step. Walked home. Was not confined to bed. Has not since been able to lie on her back. Doesn't like to sit down because pressure of the chair against her back hurts. Can't bend forward nor back without pain. X-ray fracture of left transverse process first lumbar. Put in a plaster jacket February 16. Jacket removed May 3. No pain when in jacket. Not seen again till Feb. 16, 1928, when she was still disabled by pain in the back. Operation Feb. 28, 1928. Left process first lumbar removed. Sat up March 4.

Went to work April 9 and has had no recurrence of pain.

Case 4. H. M. S. M., 19, nurse in training. Fell from a horse, Sept. 21, 1924, with immediate acute pain in the back to right of middle. X-ray fracture of second, third, fourth (right). Operation September 29. Oct. 11 left the hospital. Returned to work October 20, a month after accident. Seen July 20, 1928, when she stated, "Back never bothers." Report in January, 1930, "Doesn't know she has a back."

Case 5. N. C., laborer, 35. Referred by Dr. J. A. Sevier. Feet slipped as he was carrying pipe down hill and he landed on his back on a rock, January 28, 1925. Fracture third and fourth lumbar (right). Operation February 2, 1925. Left hospital February 22. Went to work March 9, six weeks after accident. Has gone to Italy, so present status can not be obtained.

Case 6. B. M. C., maid, 25. Seen on March 17, 1927. Seven years previously was pinned under an overturned automobile for two and one-half hours. In a week's time resumed her work though she has had a dull ache between the shoulders and in the small of the back. Stooping exaggerated the pain, or riding in an automobile. Fracture left transverse process, first lumbar. Returned to work April 28, 1927, and has worked uninterruptedly since. Operation was March 28, 1927; left hospital, April 5.

Case 7. I. R., trained nurse, 29. Referred by Dr. J. B. Crouch, April 1927, for suspected lesion of the right kidney. In September, 1926, had fallen from a horse. Was not confined to bed. Since January, 1927, has had pain in the right costo-vertebral angle, dull, but steady with an area constantly sensitive to pressure. Has not had to give up work. X-ray fracture of left process first lumbar. At present has occasional discomfort but not enough to demand operation.

Case 8. A. J. K., laborer, 57. Seen Feb. 9, 1928, for the Industrial Commission. In October, 1926, fell head foremost into a ditch, striking his right side against an abutment. Finished out the day and worked most of the next day, when pain in the right loin forced him to quit. In bed a little over a week. Pain in right flank has been continuous and he has not been able to work since his injury. During his stay in bed his chest was strapped for pleurisy. First lumbar, right. Still having pain.

Case 9. D. B. T., 56. Seen June, 1928, following fall from a horse. X-ray shows fracture left process second lumbar. In bed eight days. Resuming riding June 30. Long riding is followed by considerable distress in the back so that he has curtailed his horseback riding, but with this exception is fairly comfortable.

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## THE MANAGEMENT OF INDUSTRIAL INJURIES

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(Read before the New Mexico Medical Society, at its forty-eighth annual meeting, at Raton, N. M., June 4 to 6, 1930.)

Today the whole world is striving for greater speed in the accomplishment of all things. The radio and the airplane have apparently furnished the stimulus that has thrown us into a speed age. In every field of endeavor efforts are being made to improve on the old methods of doing things in order to get quicker results. The practice of medicine has been caught in this demand for greater speed and perfection and as a profession we should be aware of this demand.

If one looks back a few years in medicine and notes some of the progress that has been made it becomes quite evident that commercialism was the primary urge that resulted in many advancements that have been achieved. General Gorgas was assigned the task of conquering yellow fever so that the Panama Canal could be built rather than with the thought of benefiting the human race, and the same idea has been the father of many other advancements. Today industry demands that quicker results be obtained in the treatment of injuries, with the minimum amount of resulting disability.

The most important factor in speeding up end results in injuries is the prevention of infection. Everyone realizes that infection not only delays the convalescence but determines the end result. How we can prevent infection becomes the "key" to the situation. We will have to forget and discard some of the old principles that have been taught us. We have been deceived when taught to believe that the application of antiseptics was the principle that determined whether or not infection was to be prevented. We now know that there are no reliable

antiseptics and that all of the old "stand-bys" fail when put to the test of prevention. Our salvation is, however, soap and water, and the continuous application of moist hot packs.

The management of lacerated wounds should be reduced to a simple formula. First should come the general welfare of the patient, which necessitates controlling of shock. I would like to give you a simple definition of what shock is: It is the result of hemorrhage, cold and pain, either singly or combined, and we must control these agents if shock is to be prevented. All of these conditions lower blood pressure promptly and if the pressure of the blood is allowed to remain under seventy for more than three or four hours nothing can be done to save the patient's life. The vegetative cells of the medulla succumb to this lowered pressure, after which they cannot be restored. When these factors that produce shock have been controlled, the wounds of the soft parts and of the bones should be considered. In the severe cases the patient should not be given an anesthetic. The pain should be relieved by blocking the tissues with novocaine and the giving of morphine, then the wounds should be scrubbed vigorously and continuously for fifteen or twenty minutes with soap and water and then trimmed of all portions that do not show evidence of ample circulation. The fracture, if one exists, should be approximated as well as possible and the wound packed with sterile vaseline gauze and a plaster cast applied to secure complete immobilization. The wound should not be disturbed, if all goes well, for some three or four weeks.

Dr. H. W. Orr, of Lincoln, has taught us that complete immobilization is a great factor in the prevention of sepsis and that even in wounds that go on to suppuration it is best not to disturb them, as the vaseline gauze will not obstruct drainage and the resistance of the tissues will be greater if not disturbed. His rule is to keep hands off entirely if the temperature does not go above 102 degrees. I am entirely in accord with this teaching and, where the scrubbing with soap and water has been within eight hours from time of injury and the wound packed and immobilized, rarely will there be an infection.

In the badly lacerated and contused wounds of the soft parts, it is sometimes best to apply continuous hot moist packs with continuous rest after the primary scrubbing for a few days, until a debridement can be done. However, we should keep in mind the fact that it is impossible to irrigate or dress a wound for any length of time without its becoming infected.



Lacerated wounds that extend into joint surfaces, if seen within four to six hours, can be cleansed and closed safely. If sup-puration occurs drainage will be promptly established through the suture wound, and, if it does not occur, much time will be saved and a better joint function will result than where primary drainage is established. If it is not possible to secure and maintain proper alignment of the bones in compound fractures after the wound has been packed with vaseline gauze and a cast applied either with or without fixed extension, the fracture becomes secondary to the infection and is allowed to wait until the wound has healed and is then subjected to open reduction if occasion demands it. This will produce much happier results than will attend attempts to fix the fragments in the presence of an open wound.

In the management of simple fractures, I wish to call your attention to only a few types. I am convinced that sufficient detail in the management of certain fractures has not been taught us, and that poor results too often follow in certain cases where they could be prevented.

It has been my experience that complete fractures of the upper third of the femur, below the trochanter, cannot be properly held without internal fixation and that at least four months' protection from weight-bearing is necessary. Bowing is prone to occur in this type of fracture, with resulting deformity and shortening. For many years I used the intra-medullary peg or bone graft for these fractures, but the results were so universally bad that I gave up the bone graft for all fixation purposes and reserve it for non-unions only. For fixation I use the silver wire and never a metal or bone plate of any kind. It is possible that the bone graft would have proven satisfactory if longer periods of protection from weight-bearing had been enforced, for usually the graft broke just at the critical time and deformity resulted. (See Fig I and II.)

Fractures of both bones of the forearm in the lower third that are displaced, are very difficult to reduce. Usually it is impossible to secure reduction without the use of an ice-pick-like instrument introduced subcutaneously under the fluoroscope. Malpositions in this type of fracture are favorite subjects for malpractice suits and difficult to defend. (See Figs. III and IV.) In treating fractures of both bones of the forearm in adults it is my practice always to use fixed extension after either open or closed reduction, for three weeks. It is not generally known, but is universally true, that such fractures require about three months' splinting to se-

cure union and that open operations of forearm fractures after six or eight weeks always lead to definite non-unions or marked



Fig 1. Shows simple fracture of right femur.

deformities. The motto in the treatment of these cases should be, "Secure early the position that you are going to be satisfied with and then stand by and don't meddle further," and you will be rewarded with successful union and function.

Simple fractures of the tibia and fibula can usually be reduced and held with extension. Open operations often end in bad results and should rarely be done. Slip a pin through above the os calcis and use sufficient pull to get the fracture down and then apply a cast incorporating the pin in the plaster, for three weeks, and then get weight-bearing early on the cast and your results will be satisfactory.

The Italians have taught us that closed reductions of comminuted fractures of the lower end of the humerus give better results



Fig II. Shows result in case of Figure I, after insertion of medullary peg. Note fracture of the peg and marked deformity with an inch and a quarter shortening.

than do open reductions. Therefore, it is best never to do a primary open reduction on such cases even though the x-ray picture strongly suggests an operation. ((See Fig. V.)

Fractures of the olecranon in the upper third usually result in non-union and marked disability unless they are secured with live sutures primarily. Therefore, the rule should be always to secure these fractures with sutures from the fascia lata as soon as the injury to the soft parts has subsided. (See Fig. IX.)



Fig. III. Shows fracture of both bones of the forearm two weeks after injury.



Fig. IV. Shows case of Figure III, after reduction and cast of fractures of both bones of forearm, with aid of ice pick.

Comminuted fractures of the head of the humerus should be treated conservatively. If the head is fractured and completely dislocated, nothing should be done and early motion should be started, unless there is pressure on the nerve trunks, when the head should be removed. However, it should be remembered that the function

of the arm will not be as good as where the head is allowed to remain dislocated.



Fig. V. Shows result seven months after compound comminuted fracture of lower end of humerus. Patient has good function, with 75 degrees flexion and 135 degrees extension.

#### CONCLUSIONS

Infections in lacerated wounds can best be prevented by thorough scrubbing and debridement of the wound, followed by packing the wound with vaseline gauze and complete immobilization. Bone grafting operations should be reserved for non-union in fractures and silver wire is easier and safer to apply for maintaining apposition in fractures that cannot be held with extension. Fractures of the elbow, shoulder and lower leg should be treated conservatively. Local anesthetics are entirely satisfactory for reducing fractures in most cases.

#### TREATMENT OF INJURIES TO THE CRANIAL CONTENTS

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(Read before the New Mexico Medical Society, at its forty-eighth annual meeting, Raton, N.M., June 4 to 6, 1930.)

Cranio-cerebral injuries would perhaps be a more suitable title for this article. Injuries to the cranium and its contents usually go hand in hand, though it frequently happens that either one may be seriously damaged without injury to the other.

Few will disagree that traumatism to the head requires closer observation and riper judgment than injury to any other anatomical region. With the exception of the manometer there is no instrument of precision to help us. The x-ray may or may not show a cranial injury, but it reveals nothing as to what has happened to the cranial contents.

In serious injuries to the walls and contents of other body cavities certain signs



and symptoms are always in evidence; i. e., to the chest, pain and changed respiration; to the abdomen, rigidity, pain and vomiting; likewise, damage to bladder or kidney will show a changed excretion. In these latter injuries a history from the patient is usually available. The patient can at least inform us what happened and where his pain is located.

The unconscious patient with slight evidence of a head injury may land in jail for drunkenness, instead of in a hospital. He has been known to be admitted to a hospital with the odor of alcohol on his breath, to be neglected for several hours, and the mistake was detected, if ever, too late to be remedied.

Little time will be given here to the less serious types of head injuries, though it is well to bear in mind that supposedly minor injuries may rapidly assume serious proportions. The head injuries with immediate or rapidly increasing mental changes are the ones that demand early diagnosis and prompt decision as to treatment. In speaking of mental changes, slight confusion to complete unconsciousness come under this category. Few cases of compound fractures of the skull come under this heading. They have either decompressed themselves, are decompressed by the usual surgical debridement, or are recognized as hopeless from first observation.

It is assumed that all of us readily detect a depressed fracture of the vault and relieve same as soon as the patient's condition warrants it. It is also assumed that in simple linear fractures, rest, ice to the head and perhaps sedatives, be administered; likewise, careful observation in other head injuries that present less serious manifestations. If headache or vertigo persists, in these milder cases, rest in bed and repeated lumbar puncture will prevent many disabling sequelae.

The type of case we wish to consider more fully here is the one that is unconscious when first seen or the one wherein all of the grosser symptoms are increasing either rapidly or gradually. Surgical interference when contraindicated not only hastens a fatal ending but creates lack of faith on the part of the laity in surgical interference in proper cases. Instead of attempting to describe a serious head injury wherein surgical intervention would be unavailing, allow me to refer you to the case described by Brown and Brown of El Paso, as reported in *Southwestern Medicine* of April, 1925. Therein the profession will find a summing up in concise language of an irremediable head injury.

It is the unconscious patient that has a fast pulse rate, low blood pressure and a low manometer reading and abolished reflexes that does not need a decompression. Conversely, an unconscious patient with a slow pulse rate, high blood pressure and increased manometer reading should be decompressed, not only to prevent death from medullary compression, but to avoid meningeal and cortical changes should death not ensue. With careful observation, these two types of cases should be differentiated.

Complete reliance upon manometer reading is unsafe. In a case not reported here the spinal fluid seemed to be under normal tension or less but the slow pulse and high blood pressure were our deciding factors and we found the intracranial fluid under great pressure. Just what happened is speculative. The brain was, likely, forced down by the fluid and blocked the foramen magnum, thus changing the tension between the fluid contents of cranium and spinal canal. According to Frazier, pressure above twelve millimeters of mercury is suspicious and above twenty millimeters pathological. Babcock calls attention to the danger of foramen hernia in releasing large amounts of spinal fluid.

Where the time element is not pressing, repeated spinal puncture, magnesium sulphate by rectum, saline and glucose intravenously as dehydrating agents, should be used.

MacLaire, (J.A.M.A., March 6th, 1926), feels that our treatment for cranio-cerebral injuries should be as well fixed and definite as our treatment for acute appendicitis. In substance, he further states that to sit idly by applying an ice cap and administering sedatives to an increasing brain compression is nothing more than ignorance or criminal negligence.

Self-appointed and poorly trained surgeons are alert in the removal of a mildly offensive appendix. They will remove an ovary on circumstantial evidence; they will remove an unsuspecting gallbladder as soon as they master the anatomy. Yet they seem unaccountably reluctant to provide a vent for an edematous fluid that is gradually squeezing the nutrition from the brain centers either to cause death or to result in mental crippling.

Surgical cowardice amounting to criminal neglect in this type of case is usually the result of little training in surgical diagnosis. No particular skill is required in performing a simple decompression. Removing a small area of skull and incising the dura under the temporal muscle is so simple a procedure that a description of it seems unnecessary.

The mental processes of a surgeon faced with this responsibility and really doing nothing that could not be accomplished by a midwife are hard to conceive. Given an unconscious patient with a head injury, whose every sign and symptom cry aloud for decompression over a period of hours and days, and then picture the helpless untrained surgeon explaining to the family how serious it all is and how everything is being done that can be done. A fair example of the blind leading the blind. It is hardly human nature for us to expect this type of man to call in a real doctor but he could borrow a book and have some one explain to him the indications for proper surgical treatment in head injuries.

#### CASE REPORTS

Case No. 1. Male school teacher, 22 years of age, admitted to St. Mary's Hospital, Gallup, New Mexico, February 3, 1929. Injury caused by falling from trapeze, striking head on floor. Was unconscious for two days without medical attention, before admission to hospital. On admission, was extremely restless, partly conscious, with failure of orientation, and complained of severe pain in head. Pupils slightly dilated, reacted slowly to light, no inequality. There was no history of bleeding from the nose or mouth or of fluid from the ear. Slight contusion on the back of the head.

Spinal puncture was done, with the patient in the recumbent position, shortly after admission. Pressure about 20 millimeters of mercury; spinal fluid frankly blood-stained; 18 c.c of fluid removed. Patient's condition improved almost immediately after the removal of spinal fluid. The headache and practically all cerebral symptoms had abated on the third day. The patient resumed teaching school in two weeks and has had no return of his cerebral symptoms.

Case No. 2. Male Italian, 40 years of age; admitted to St. Mary's Hospital, Gallup, New Mexico, on June 1, 1924. Railroad crossing accident. Patient admitted in serious condition, unconscious. Multiple fracture of the lower mandible, several fractures of the long bones. Patient considerably shocked. Treatment for shock administered; at the end of two days, patient's condition improved with the exception of his cranio-cerebral injury. The x-ray failed to reveal a fracture of the vault. Spinal puncture in the recumbent position showed spinal fluid under great pressure; same not recorded. On the second day this patient's reflexes were diminished, pupils were equal, slightly dilated. Systolic blood pressure 170, pulse rate varying between 70 and 80; incontinence of urine.

On the third day following his injury, a right-sided subtemporal decompression was performed. Upon nipping the dura, the cranial fluid spouted up, maintaining a level several inches above the head for several seconds. A small rubber tissue drain was installed under the dura. The following morning this patient had regained consciousness and spoke fairly well in his native language. All brain symptoms disappeared in a few weeks. His incontinence of urine was the last symptom to disappear.

Cases 3 and 4 were treated in another hospital in a neighboring city before coming under my observation. Through the courtesy of the hospital and attending physician, I have been able to secure the records.

Case No. 3. American, 35 years of age, baker by trade, injured December 2, 1927. Admitted to a standardized hospital in Albuquerque, New Mexico, on the day of injury. The hospital records show that this patient was admitted in an unconscious condition. Railroad crossing accident wherein his wife and child were killed. Temperature on admission 98, pulse 110, respiration 24. X-ray at Albuquerque showed an impacted fracture of the anterior end of the superior ramus of the right pubic bone; and a suspected fracture of the posterior end of the superior ramus of this bone. No fracture of the skull could be made out by the x-ray. This report shows some abrasions about the head, face and body. Blood pressure was not taken.

It is apparent that this man's chief injury must have been a head injury, as he was up in a chair twelve days after his accident. The injury to the pelvis must have been of slight importance or the patient could not have been or would not have been allowed out of bed. The nurse's records show that this patient had to be catheterized; was very restless and complained of pain in the head, headache, and nausea, as soon as consciousness was regained. According to the records this patient had ice to head, sodium benzoate, caffeine and strychnine and morphine for several weeks after admission. The records show that he was dismissed in fair condition, carried out of the hospital on a stretcher. There is no history of a spinal puncture being made during the two weeks. Neither is there a history of blood pressure being taken.

This patient was moved from Albuquerque to St. Mary's Hospital in Gallup, New Mexico. Was admitted on December 16, 1927, on the same day as his discharge from the Albuquerque hospital. Hence, my first observation of this patient was made on December 16, fourteen days after his injury. A relative of the family informed that the attending surgeon had recommended a few weeks' rest and nothing more for this patient. The only reason for leaving him in the Gallup hospital was for a day or two of rest before continuing to his home 150 miles beyond.

Examination showed a medium sized man with a blank facial expression, failure of orientation. He would answer questions slowly, when shouted at or aroused by being shaken. Mouth and tongue rather dry. Pupils equal, moderately dilated, and slow to react. Deep reflexes slightly exaggerated, but apparently alike on both sides. Systolic blood pressure, 160; spinal fluid pressure, 18 millimeters of mercury, in a sitting posture. From the very beginning, this patient showed marked symptoms of brain complication. He was delirious part of the time, restless, complained of headache, had to be restrained, later refusing nourishment and, finally developing incontinence of bowel and bladder. We met with great difficulty on the part of this patient's relatives owing to the fact that their former physician had advised rest and watchful waiting. It was fifteen days after admission before we finally obtained consent for a decompression operation. At this time a left subtemporal decompression was performed. The patient showed improvement for three days and then gradually lapsed into his former condition. Fifteen days later a right-sided subtemporal decompression was performed. The last decompression, wherein a rubber dam was installed, drained slowly but freely for three days. This patient's condition immediately improved and he was dismissed from the St. Mary's Hospital on February 3, 1928, approximately six weeks after his admission and eight weeks after his injury. This



patient has resumed his trade as baker and seems now to be perfectly normal mentally and physically.

Case No. 4. Patient aged 30, male, occupation superintendent of the state highway machinery. Was admitted to a standardized hospital, Albuquerque, New Mexico, October 21, 1928, in an unconscious condition. He had been injured in an automobile accident; injuries to the chest and head. X-ray exposures, according to records, show no evidence of fractures of the skull. Several ribs were broken. Fragments seemed in fairly good apposition. According to the hospital records, while this patient had considerable injury to the chest his major injury soon proved to be the head injury.

During this patient's stay of four weeks, in the Albuquerque hospital, his temperature was never above 99. There is no history of a blood pressure being taken or a spinal puncture being made. During the whole of this patient's stay in the hospital he required sedatives, including morphine and the barbitol products. The nurse's record on the day of his discharge shows the patient very unruly, talking in a silly manner. This patient did not come under my observation until about one year after the accident. The superior officer in the highway department and the patient's wife came to me with the information that this patient's memory was bad, that he was unreliable, and that he seemed entirely changed in his mental attitude, at times was violent. Due to his changed demeanor, his superior officer was forced to discharge him. He is now working in a position of less responsibility. In this latter case, repeated x-rays of the head never revealed any evidence of fracture. No treatment was attempted in this last case, as we felt that the cerebral damage at the end of a year was irreparable.

None of the above cases had discoverable skull fractures.

Case 1 seemed to be immediately relieved by a simple removal of fluid by spinal puncture.

Case 2 was apparently going on to a rapid and fatal termination despite spinal puncture and attempts at dehydration.

Case 3, which did not come under my observation until two weeks after injury, was apparently going on to a fatal termination.

Case 4 did not come under my observation until a year after his injury. From the hospital record, no treatment in a modern sense was administered, for what was evidently a marked cerebral compression. This patient, despite his treatment, somehow managed to live and is now more or less of a mental cripple.

#### CONCLUSION

Many patients with serious head injuries can be saved from death or serious sequelae by using modern methods of diagnosis with proper medical and surgical treatment.

#### DISCUSSION

(Papers of Drs. Hartwell, Francisco and Hannett).

DR. P. G. CORNISH, Jr. (Albuquerque, N.M.): These papers have all been very instructive to me and have brought out a great many points that I believe are worthy of consideration by all of us. I was particularly impressed by Dr. Francisco's conservative treatment in his fractures and his advo-

cating the use of judgment and brains rather than a lot of mechanical appliances that are supposed to apply universally to all types of fractures. Dr. Hartwell's cases have impressed me particularly from his radical treatment. We have had a good many fractures of the transverse processes—industrial injuries—and almost universally we treat them by conservative methods, that is, rest in bed for varying lengths of time, then getting the patient out of bed and getting him back into the every-day working habit again. As far as we have been able to see, there have been no bad results. All the patients have returned to work, hard work, within from five to eight or ten weeks. It is possible the type of men we have been dealing with may have had something to do with this. If the patient is a laborer, he feels he has to get to work to make a living and he goes back to work and probably suffers some pain and discomfort, but feels that he has to continue and consequently carries on until the pain is eliminated. However, in none of those cases have we heard of any disability continuing. I am very glad to hear of the results the doctor has obtained with his more radical treatment and we will bear that in mind in the future.

DR. W. L. BROWN (El Paso, Texas): I have enjoyed all three of these papers and I think they are very important papers to have at this time, as, while there is a very decided difference of opinion towards the treatment of certain forms of fractures, still it seems we all get very much the same results in the end. We have not been able to subscribe to the method of leaving the compound fracture strictly alone, and for a great many years we have been making temporary fixation of compound fractures, but that is not to be interpreted as being routine. I remember a case we had some time ago—that of a policeman who suffered a compound fracture of the leg. Terrific infection had set in, the foot being immensely swollen and discolored. The attending physician called me in consultation and I suggested a temporary fixation. He demurred, however, stating that, while he would back me up in anything I wanted to do, he was afraid of possible criticism which might arise in event of a temporary fixation. I said that I was perfectly willing to take the criticism which might come, but I believed it would do the man no harm. We went ahead with it and within 24 hours he was very much improved. We had the bones right in line so that when he had a bone graft some eight or ten months later, it was a perfect success and was accomplished with comparative ease. I cannot help but believe we add nothing to the risk of infection in fractures by fixation. We must remember that, after a fracture occurs, nature makes one big effort to unite that fracture and will not make a like attempt later on. When the time comes, if we want to make a bone graft, it can be done with ease. I know this method is not popular, but still believe that it is good surgery and I have the nerve to do it in special cases. In my opinion, Dakin's solution and some antiseptics still have some value.

Dr. Hannett's paper I enjoyed very much and thank him for quoting an article of ours. I can add nothing to his paper, which was certainly well written and instructive on the proper way of treating brain injuries.

As to fractures of the transverse processes of lumbar vertebrae, we have not had enough experience to be able to add anything to Dr. Hartwell's paper.

DR. A. E. HERTZLER (Halstead, Kansas): Dr. Brown deserves a little support, apparently, in the use of plates in compound fractures, and if

he is a little bit leery because Murphy and others did not approve, he can have solace that Malcolm Harris fully approves of it. At my house we have done this for many years; wherever we have an open fracture we put in a plate, pack it wide open, and we have the bones in line, so if we have to graft later on, we have everything in fine position to do it, so it drops in place and stays there. The big joke is that in lots of cases, we do not have to do it, because by that time the place has healed and all we have to do is to take out the plate. As to the use of a drill in extremity fractures, the Doctor showed one fracture near the shoulder. The way we do that is simply to get the bone in place and then, through the unbroken skin, take one of these long drills and push it through the soft part through the shaft and into the head and let it stick for two, three or four weeks, according to the age of the patient. This saves danger of infection, does no harm and the results are generally good: If you go clear into the joint, that is all right, but just back up a little.

DR. C. H. CHURCHILL, (Madrid, N.M.): I should like to ask Dr. Francisco if there are any objections to using antiseptic solutions in hot applications on these wounds. I have a great many wound cases; the smaller ones I treat myself, the larger ones I refer to the hospital in Albuquerque. I am very much in favor of using hot moist applications and always have some kind of antiseptic solution on hand. I never had any trouble from this and it seems to me very few of the lacerated wounds get along without a drop of pus and if we will use an antiseptic it will save much trouble. The class I treat are mostly coal miners and I do not think I have infection in over five per cent of my cases, if I see them early.

DR. CRUM EPLER, (Pueblo, Colo.): I desire to express my appreciation of these three papers. During the war there developed a class of bone setters who have carried on since. Also at that time, in commercial life, there developed what are commonly known as efficiency experts in all walks of life. At the present day we are 'experted' pretty well and the medical profession has to arise to that occasion. I see in these three papers evidence of efficiency experts and all that means—a fair ground of anatomical knowledge, pathological fact and good sound common sense. Now there are a few of us here who practiced a long time before the x-ray was in vogue. In those days we set fractures and had good results so far as function was concerned, equally as good as at the present day, perhaps—not always, of course, but I mean speaking generally. The x-ray does this, however: shows us the break, shows us how badly broken or whether compound, the position of the fragments, etc., and gives us a fair idea of how to manipulate, when we use experience and good sense in an attempt to get these in proper position. But it is more or less of a bugaboo, particularly to the young man who is just out of college, who is tackling his first transverse fracture and when he sees the x-ray picture he is often misled, or apt to be.

In this industrial work the thing we are after is based strictly on the business end of life, namely, a result that has an economic value to the patient, one that makes him capable of having at least three-fourths of all of his function if possible, and that gets him out at work as soon as may be.

So far as antiseptics are concerned, I do not believe much in antiseptics in compound fractures. I believe in cleanliness and of course cleanliness is next to godliness. If you keep it as clean as you can, get proper position and do not do too much,

you will be able to assist nature to repair the part very materially, and thus you will come along in the class of efficiency expert.

Dr. Hannett's paper was one of great interest because the intracranial injuries are more or less perplexing to all of us. There are no two operators who operate just alike and probably no two would do exactly the same thing in the same way, or treat a case similarly. I could recite a number of head injuries in which much was gained by delaying operative procedure and I am inclined to delay that always up to a certain period. Whether it is a fracture of the cranium, subdura or what not, I believe in delay up to a certain period, but that period should not extend beyond the point where the patient's condition is pretty good, even though he may be temporarily unconscious. The things to do, in other words, are to treat shock and have the patient await an opportune time. Use good common sense and the basis for that has been laid down for many years for the treatment of fractures in industrial injury.

As to the paper of Dr. Hartwell, those of us who do not practice in coal mining districts are not so subject to contact with fractures of the transverse processes. I think there is quite a difference of opinion in the method of treatment. Some of the members of this Society who live in this community will tell you they find these fractures often complicated with other things, particularly with crushed fractures of the body of the vertebra. However, those who are injured without the crushing process, as these coal miners often are, have to be treated, and I was particularly interested in Dr. Hartwell's procedure. I have not had occasion to operate in the cases I have had. The results have been good, but each case should be treated as it requires. I do not feel that any fast and fixed rule can be laid down to apply to all cases.

DR. C. B. FRANCISCO, (closing): I want to thank the gentlemen for the discussion and wish to emphasize one point—the giving of antitoxin. I believe you should give the anti-gaspoisoning bacillus with the antitoxin. I do not know just how much the anti-gas inoculation will protect, but it is of value. I have no particular quarrel with any one who wants to maintain a little better apposition, but I have seen many a poor devil killed by the frequent meddling with his wound, so my practice is to do what you want to do and then leave it alone. If you feel that you should put something in there to hold it up a bit—and sometimes this is an advantage—do so, but then leave the wound alone. I quite believe the better apposition, or better approximation you can get, the better circulation you will have, and if you get it without putting something in there, I do not believe you need a plate. The main point is, when you get that, give nature a chance; do not do too much. About antiseptics, I think boric acid or some alkaline solution is of distinct value.

In the treatment of forearm fractures of children, my experience has been that you can believe the child, but you cannot believe the adult. If the child tells you he has a pain, you better believe it. A child with a forearm fracture should not have pain after reduction, as the pain is that usually caused by swelling. In adults, the danger is in non-union. Some of these cases are slow to heal; sometimes it will take them a year, but they will come around all right. Get the apposition as early as you can, just as soon as the swelling goes down, and then sit tight. If you go to meddling after six or eight weeks, you are going to get into trouble. There is one thing you cannot hurry and that is the function of your forearm. You must



be very conservative in putting these patients back to work.

DR. J. W. HANNETT (closing): What Dr. Cornish said about having these patients rest in bed is very important. These disabling after-effects from an apparently minor head injury, we all hate to see. The head injury is so often accompanied by other injuries—perhaps a fractured pelvis, a broken jaw or injuries to the chest—that the head injury has either been overlooked or associated with the general injuries and often there is cerebral compression and death ensues. In the anxiety to take care of some other injury, the physician frequently fails to note the head injury. Therefore the preliminary examination should be a most thorough one, so there will be no danger of overlooking such conditions.

DR. J. B. HARTWELL (closing): I just want to stress one point in closing and that is that the type of case I was emphasizing in my paper was the uncomplicated one. Of course, if you have a complication, such as rupture of the kidney, liver or spleen, those injuries take precedence over the very minor fractures of the transverse processes. I was expecting to be jumped for advocating so radical a treatment in an injury that so many report as doing well on more conservative treatment, but I cannot help but feel that, though with the more conservative treatment these men may be able to go back to work and take up a job, yet if followed over a period of months or years, you will find they are still suffering pain, whereas those cases that have been subjected to the radical treatment are fully free from pain. I think that is worth a good deal.

## DIAGNOSIS AND TREATMENT OF GALLBLADDER CONDITIONS

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(Presented at El Paso County Medical Society on September 22, 1930.)

In the study of patients from the standpoint of gallbladder pathology, we must consider the patient as a whole, not an individual organ. The diagnosis as well as the treatment brings to our consideration a very complicated anatomical and physiological network.

The functions of the gallbladder are: to store bile during fasting, owing to the relaxation of its musculature; to concentrate it (Harmastin proving this as to bile salts and Raus as to bile pigment) by absorption of water through its mucous membrane; and to provide bile for digestion as is needed. It empties its contents largely by active contraction of the musculature, as is proven by combined Lyon drainage and cholecystography. Such factors as intra-abdominal pressure, diaphragmatic pressure, and respiratory movements, have very little effect. The emptying is facilitated by a diet rich in fat; very little effect is obtained by protein and none by carbohydrate. Baden states that the mechanical passage of food through the intestine is not a factor in stimulating emptying. The emptying during digestion is intermittent and at times is entirely absent.

Emptying usually occurs within ten or fifteen minutes after stimulation. The sphincter at the lower end of the common duct is possibly a factor concerned in the regulation of the flow of bile, but not necessary to emptying. Emptying is interfered with by chronic cholecystitis, producing a thickened wall, or an injury to the musculature; however, active function may take place even in the presence of stones. This fact may account for such vague symptoms as we are wont to find in cases of cholecystitis, such as fullness in the epigastrium, gas, and nausea.

Orr describes the wall as being composed of a complete fasciculated muscular coat, which at its neck is thicker than elsewhere and is arranged in two layers in such a manner as to suggest a sphincter. The presence of large stones in the common duct, without symptoms, is due to the practical absence of all muscular tissue in the common duct except at its lower end, where well-developed fibers encircle the lower one-half-inch, as the sphincter of Oddi. The girdle and scapular pains and hyper-esthetic areas noted over the distribution of the various branches of the lower inter-costal nerves, are explained by the sympathetic connection through the celiac-plexus which, though mainly connected with the seventh, eighth and ninth thoracic segments of the cord, has subsidiary connections with all lower six thoracic segments. The associated gastric symptoms—such as early flatulence following meals, particularly those rich in fat—is explained by numerous twigs from the vagus nerve to the gallbladder. Orr describes shoulder-tip pain, which he found in fifteen per cent of his gallbladder cases, as due to a connection with the phrenic nerve. Brouner, by the introduction of food through an intestinal catheter in various parts of the intestine, demonstrated that to stimulate the flow of bile it is not necessary that the food pass the duodenal papilla or even come into contact with the duodenal mucous membrane. Stimulation of the upper or middle jejunum can still effect an injection of bile; however, there is no reaction of the gallbladder when food is brought into the ileum, the colon, or rectum. Therefore, feeding by means of a jejunostomy does not prevent the function of the gallbladder. The same holds true when operated by the second Billeroth method. He likewise noted that the dye does not empty for several days if stimulation is attempted by the rectum. Garbat, using rectal installations of physiological sodium chloride solution, indigo carmine, peptonized milk, and other solutions, obtained a good flow of bile,

which, however, had no effect on the disappearance of the gallbladder shadow. He concluded that contraction of the gallbladder was probably due to a nervous stimulation.

Though gallbladder infections are ordinarily found to be most prevalent in the fourth and fifth decade, nevertheless, cases have been reported as young as four years. Their occurrence about the age of twenty is not uncommon.

Any condition favoring stasis, such as adhesions, visceroptosis, pregnancy, abdominal distention, pressure from adjacent organs, and torsion of the duct, predisposes to infection. Infection is variously described as occurring through the blood, lymph and bile. The infection through the bile is only problematical. Most cultures from the bile are negative, while Wilke reports in his series of cases positive cultures obtained from the mucous and sub-mucous layers in forty-two per cent, having obtained a streptococcus organism and, since the infection is generally found in the superficial layers, mere contact of the infected bile would be insufficient to cause this condition. Bile normally inhibits the growth of streptococcus. Infection may occur through the so-called, ascending route where drainage of the common duct is obstructed at the entrance to the duodenum, the infection passing from the duodenum to the common duct to the gallbladder. Infection by the descending route is described as occurring through the hepatic artery or portal vein to the liver, by which bacteria are carried by the lymph or bile to the walls of the gallbladder, or by spreading of an infection through its walls from a contiguous organ. The descending infection may come from remote infection such as diseased tonsils, teeth, appendicitis, typhoid, scarlet fever, osteomyelitis, various other inflammatory conditions of the large bowel, acid and sub-acid gastritis. Rosenow stresses the selective affinity of streptococcus from the tonsils for the gallbladder. Sudler has shown that there is an intimate connection between the liver and the gallbladder, through the attachment of the gallbladder to the liver. Judd and Heyd consider that cholecystitis is rarely present without hepatitis and they consider it probable that, as Graham and Peterman have shown, in cases of cholecystitis associated with abdominal infection hepatitis precedes cholecystitis and the gallbladder is infected secondarily through the lymphatics. The infection travels to the liver by the portal vein, or rarely perhaps, by the hepatic artery; following this a pericholangitis occurs, and then, because of the extensive anastomosis between the

lymph of intra-hepatic and extra-hepatic biliary systems, a direct extension of the infection of the gallbladder takes place. Toxic cholecystitis can be proved experimentally.

Stasis plus infections predisposes to formation of calculi. Calculi may form, however, without infection. The organisms most commonly found are typhoid bacilli, non-hemolytic streptococci, and hemolytic streptococci, and staphylococci.

In making a diagnosis of gallbladder conditions it is not sufficient to be satisfied with a diagnosis of this condition alone, but every effort should be made to exclude the probability of coexisting conditions. I should judge that not less than seventy per cent of our unsuccessful treatments are due, not to faulty treatment of the gallbladder condition, but to the lack of treatment of other conditions which are active but not recognized. Certainly this holds true in cases with associated appendicitis, which error is usually corrected if surgery has been resorted to. A second and very important associated condition is that of spastic colitis, a condition about which very little has been written and which is often not recognized even though x-ray plates may be at hand. Dr. George Turner and I expect to report in the near future our observations of cases of this condition examined by us during the past three years. A third condition is some disease of the stomach and duodenum; one of the most common is local or generalized atony. I shall show the x-ray plates on such a case in which gallbladder operation had been recommended on three occasions; when properly checked it showed a normal gallbladder, but extreme atony of the G. I. tract—presenting, however, symptoms which could easily be attributed to the gallbladder. A fourth type of case is one which I spoke of in 1928, namely, ptosis, and its accompanying neurasthenic manifestations. Even the low grade tenderness common to gallbladder infection, as well as the constant pain in the region of the gallbladder, will be described. Operation on this type of case usually leads to much worse symptomatology than previously noted, and medical treatment aimed at the gallbladder will be a flat failure. Therefore, even with the aid of our laboratory tests, we shall still fall far short of the proper interpretation of our cases if an exhaustive history is not resorted to. Likewise, this history is at times invaluable in the proper interpretation of borderline laboratory reports.

The physical examination is usually negative, except in so far as gallbladder conditions show a predilection to certain types of build. Once more let me say that the asthe-



nic type should be looked upon with suspicion before diagnosing as a gallbladder case. We often find a slight degree of tenderness in the gallbladder region. By striking the upper part of the rectus muscle with the ulnar border of the hand Reisman feels that he is able to elicit pain which has not been found on ordinary palpation. The gallbladder may at times be palpable, but I still cling to the opinion that a large number of palpable gallbladders are in reality nothing more than a spasm of the right rectus. From laboratory tests we may at times obtain some information. Except in the acute cases the blood count is usually not altered. The urine may show traces of bile pigments several days before jaundice is present. Examination of the bilirubin of the blood may be of value. Other tests, as estimation of the sugar content of the blood in the fasting state, have been used. The various liver function tests may be of value in an estimate of the prognosis of a particular case. The results obtained from a gastric analysis are variable. Any gradation from a low to a high acid curve may be present and in the same patient the findings may be inconsistent, probably due to a regurgitation of the duodenal content. The duodenal drainage as first advocated by Lyon is a very valuable aid at times. This method has been severely criticized and highly praised by various groups. A stimulation by the use of magnesium sulphate, peptone, or olive oil, in my experience, will produce a flow of the so-called "B" or gallbladder bile in practically any individual with a normal gallbladder. I am not inclined to place as much importance on the presence of pus cells as was formerly the case, but do consider that the presence of detritus, which certainly can not come from either the stomach or duodenum, is of value. There is no laboratory test that can be a greater failure if not properly done. The repeated absence of "B" bile by this method indicates blockage by stone or a cicatricial contraction of the gallbladder. Atony of the gallbladder will respond if the treatment is prolonged long enough and repeated often enough. Physiologic block, as noted in the neurasthenic type can be overcome by the use of anti-spasmodics.

I shall leave the entire discussion of our most recent aid in diagnosis, namely cholecystography, to Dr. Cathcart, except to say that I personally believe that satisfactory results can be obtained by the oral administration of the dye in the majority of cases. Dr. Brown will discuss the indications for, and the methods of, surgery. I shall, however, mention a few cases which may be of border line variety, which I think will

benefit by medical treatment. The condition known as catarrhal jaundice is primarily a medical case and is not a true gallbladder condition. General methods such as alkali therapy; a diet consisting of milk, cereal, bread, and rice; and the use of bile salts and saline cathartics, of which I prefer sodium phosphate, should be used in conjunction with duodenal drainage as described previously. By this method the course of this condition should be reduced, from a course of six weeks to three months, to a course of from two to ten days. These patients when first seen usually have a marked gastric retention and inflammation of both stomach and duodenum. Gastric lavage may be the only thing which can be done on the first treatment on account of nausea and for this I ordinarily use a large sized gastric tube. Duodenal drainage is instituted the following morning and is repeated as indicated. The ordinary case is free from symptoms of gastric retention on the second or third treatment and the signs of toxemia disappear in a few days. There is one exception and that is the type in which there is a marked enlargement of the liver. This type responds slowly. I submitted one such patient to an operation with no beneficial effects, and had again to resort to biliary drainage. I have seen cases in consultation treated by other methods for a period of six or eight months, which returned to normal after four to six drains covering a period of from ten to twelve days. Another type is that of patients suffering with mild gastric disturbances, but with definite gallbladder pathology. The symptoms are so slight in this type that the possibility of a complication of surgery, such as adhesions, should be carefully considered before resorting to surgery. Along this same line is the catarrhal condition, which should be diligently treated to avoid the more serious later complications. Then there is the chronic patient with associated circulatory pathology, diabetes and the like, in which operation should be avoided when possible. And last, but not least, is the post-operative medical treatment—without which many failures to cure the existing conditions will result.

The treatment in the types of cases just mentioned should aim at proper elimination, proper hygiene, the elimination of sedentary habits, and any factor which promotes stasis. Regular rest before and after meals, proper exercise, use of saline purgatives, use of milk and cream between meals to promote emptying of the gallbladder, relief from mental strain, a diet consisting of easily digested foods and one lacking in coarse vegetables, pork, and other foods

causing gastric distress, should be insisted upon. Remembering at all times to treat the individual patient and associated pathology, as well as the gallbladder condition. Close attention should be paid to the removal of foci of infection.

Owing to the prevalence of gallbladder conditions, the measures just mentioned can be aptly instituted as a preventative to future gallbladder pathology. I wish to mention briefly various abnormalities as suggested earlier in this paper.

Case H. 112. Male, age 28. Symptoms and positive findings of gallbladder pathology showed at end of one hour a free acidity of 87—total 104.

Patient H. 72. Male, age 55. Diagnosis of cholelithiasis, subjected to operation, showing free acidity of 48—total acidity of 66 at end of one hour.

Patient H. 212. Male, age 34. Diagnosis of catarrhal jaundice. Treatment as suggested was instituted with complete relief of gastric symptoms after the second gastric lavage and first duodenal drainage, and complete relief of ill feeling after the fifth drainage, even though he continued to work throughout the course of illness.

Patient H. 164. Female, age 49. Complaining of pain in right upper quadrant and other symptoms highly suggestive of gallbladder infection, showed no pathology on either gallbladder drainage or cholecystography performed by Dr. George Turner, though adhesions were present about the first part of the duodenum to the gallbladder. Diagnosis of adhesions from previous lower abdominal operation was made and confirmed at operation by Dr. R. L. Ramey.

Patient H. 493. Female, age 52. Proven diagnosis of chronic gallbladder disease with moderate symptomatic distress. Duodenal drain showed presence of detritus but no pus in "B" bile. General method of treatment, with four drains at one week intervals, completely relieved symptoms for a period of two years.

Patient H. 903. Female, age 36. Symptoms of cholelithiasis and by the Graham method Dr. George Turner reported a well outlined gallbladder casting a light shadow which indicated a fibrous wall; also noted that it was a little longer than normal and curved. The duodenal cap was fixed and irregular in outline indicating adhesions. It filled moderately well and showed a large number of x-ray negative stones. Gallbladder drainage showed considerable detritus in the "B" bile, and gastric analysis showed hypoacidity. Findings were confirmed at operation by Dr. R. L. Ramey.

In conclusion, I wish to say that I consider a diagnosis of gallbladder conditions to be one fraught with great difficulties and after the diagnosis has been made our judgment is often severely taxed as to the proper method of treatment. I still consider a careful history of prime importance, cholecystography, careful physical examination, gallbladder drainage, and examination of the urine, as valuable aids, in the order named.

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#### CHOLECYSTOGRAPHY

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(Read in a symposium on gallbladder disease before El Paso County Medical Society, September 22, 1930.)

Cholecystography now constitutes an important part of the roentgenologist's work, since the abdomen is opened more often for pathology in the right upper quadrant than in any other region.

Historically, x-ray of the gallbladder has passed through three distinct phases:

The first phase was from the discovery of the x-rays in 1895 until about 1910. During that time occasional stones were recorded on the photographic plates, but so few stones contain sufficient calcium to radiograph that it was not a very popular procedure and was generally considered too unreliable for routine practice.

The second phase was ushered in by E. A. Graham, Russell Carmen, L. G. Cole and others, about 1910. When the opaque meal in connection with gastro-intestinal examinations became universally used, attention was directed to defects of the duodenal cap and stomach produced by pressure of the gallbladder, and also irregularities in the gastro-intestinal tract by cholecystic adhesions. This indirect evidence was quite valuable and of considerable assistance in placing the pathology in gastro-intestinal and gallbladder disease.

The third phase was introduced in 1924 by E. A. Graham and his associates, who, while experimenting with dyes on liver function tests, discovered a dye that was concentrated in the gallbladder in sufficient quantity to produce a radiographic shadow. The dye first used was sodium tetrabromophenolphthalein. This was later changed to sodium tetraiodophenolphthalein for use orally and sodium phenoltetraiodophthalein for intravenous administration.

A remarkable thing about this discovery is that, since it was first introduced, there has been very little change in technic or results.

#### TECHNIC

There has been considerable discussion as to the relative merits of the intravenous



or oral administration of the dye. E. A. Graham, Sherwood Moore, J. T. Case and many others are ardent advocates of the intravenous method of administering the dye. However, the vast majority of workers use the oral method. Both sides have supported their contentions with many thousands of cases and there is not enough difference in their reported results to cause one to favor one method over the other solely on results.

The oral method is the one we have generally used. This is preferred because of its simplicity and freedom from danger and as being more suited to patients not in hospitals. We, however, have no quarrel with the man who prefers to place the dye in the vein.

As to the technic of oral administration of the dye, we first used enteric coated capsules, then plain capsules, then emulsions; more recently we have been using four grams of sodium tetraiodophenolphthalein in one ounce of distilled water. The solution is made fresh for each patient and the patient is instructed to add the dye solution to four ounces of Welch's grape juice and take immediately after the evening meal, from which the fats have been eliminated. The use of this method has practically eliminated the nausea and purging frequently encountered with the other methods. The patient reports for examination fourteen, sixteen, twenty-one and thirty-six hours after taking the dye. (No food is allowed until after the sixteen hour picture except in cases where the dye has concentrated in a normal amount.) Then a meal consisting of cereal with four ounces of cream, two slices of buttered toast, cup of coffee and all the water desired, is given and after two hours another film is made to determine how the gallbladder empties, and often, with the reduced density, calculi may become visible.

The results of the x-ray examination are classified under one of three heads: (1) non-functioning gallbladder; (2) poorly functioning gallbladder; (3) normally functioning gallbladder. Any one of the three classes may show gallstone shadows.

The percentages here given are from the general averages of the various clinics reporting on thousands of cases. In view of the uniformity reported by the various workers, it is believed that the figures as here given may be considered conservative.

Unfortunately, the follow-up system of our own work does not admit of accurate analysis.

In Class 1, the non-functioning gallbladder, with or without gallstone shadows, will be found to be diseased in ninety-five per cent of the cases and seventy-five per cent of the gallbladders in this class will be found to contain stones. Many of these gallbladders have walls sufficiently dense to cast shadows even though no dye be present.

In Class 2, the poorly functioning gallbladder, with or without stone shadows, (when the shadow is persistently faint) approximately ninety per cent of the gallbladders in this class will be found diseased with seventy per cent containing stones.

In Class 3, the normally functioning gallbladder, with or without stone shadows, where stones are reported they should be found one hundred per cent at operation. In the normally functioning gallbladder where no stones are visualized, the x-ray report will register only about seventy-five per cent accuracy.

This failure to register the condition more accurately is explained on the basis that in gallbladder disease there may be diseased, normal, and hyper-functioning areas in the same gallbladder and this may lead to mistaken conclusions, as a small normal area in a gallbladder may cause a normal shadow when the gallbladder is actually diseased. There are other factors which must be considered in arriving at a diagnosis. The female will frequently empty her gallbladder quicker than the male, except in pregnancy, when there is liable to be a stasis. Individuals who have an achlorhydria, who fatigue easily and have a low basal metabolic rate, may react eccentrically toward the dye concentration in the gallbladder.

In the final analysis, it is up to the clinician to weigh all the evidence and decide what is best for the patient. It is estimated that from ten to twenty per cent of adults have gallstones—a fact which does not have a constant relation to health and disease. Judd states that, of patients with diseased gallbladders, only seven per cent showed infection in the bile; ten per cent had stones; and forty-nine per cent showed infection in the gallbladder wall. Therefore, there should be some good reason for removal of a gallbladder other than proof of a previous diseased state.

Cholecystography as practiced today is a brilliant success as regards the ability of the gallbladder to receive and concentrate dye, laden bile, and to place the location, size and shape of the gallbladder.

## THE APPLICATION OF THE AMERICAN PUBLIC HEALTH ASSOCIATION AP- PRaisal FORM FOR RURAL HEALTH WORK

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(Presented at N. M. Public Health Ass'n. meet-  
ing at Albuquerque, June 3 and 4, 1930.)

For the subject of the presidential address before the New Mexico Public Health Association, I have chosen "The Application of the A.P.H.A. Appraisal Form for Rural Health Work," basing my remarks upon the results of the application of this form to Bernalillo County, New Mexico. While the attention to be devoted to the separate headings must necessarily be made as brief as possible, in view of the time limitations of an address of this nature, the subject has been of absorbing interest to the author of this paper, and has led to the formulation of certain tentative conclusions.

The first subject considered is that of Vital Statistics, to which a total valuation of sixty points has been assigned. Since Bernalillo County is within the registration area for both births and deaths, the department is credited with eight points. Since, in this office, we routinely check death certificates from the communicable diseases (tuberculosis, typhoid, diphtheria, scarlet fever, measles, and whooping cough) and if there has been a failure in reporting, it is corrected, the department earns six points. By our practice of checking deaths under one year and stillbirths against reported births and stillbirths, we earn an additional six points. Since ninety per cent of the births and deaths are reported, and there has been a Census Bureau check on the reporting of births and deaths within two years, the department is credited with an additional eight points.

Under the heading of Classification and Compilation, the office earns four points for the annual tabulation of deaths by cause; annual tabulation of deaths by sex and age earns two points; annual tabulation of deaths under one year by color and nativity of the mother earns two points. The estimation of the annual infant mortality rate by nativity and color of mother earns two points. However, we lose four points for not having estimated the annual death rates of each of the ten locally principal causes of death. It appeared a waste of effort for us to make these estimations, since the population of both the county and city were so uncertain. We have been using 43,000 as county population, while the census enumerators have found in excess of 46,000, without the

report from the Isleta pueblo. On the other hand, we have been tentatively figuring the population of the city of Albuquerque as 35,000, while the enumerators have found only slightly more than 26,000. So we are satisfied to lose these four credits on statistics which would have been incorrect had we figured on these items. We do, however, gain six points from a monthly tabulation of deaths by causes.

Under the heading "Interpretation and Application," we lost two points for not having graphic charts available and up to date, showing death rates from important causes for three or more years; due to the inexactness of our population estimates, these were not figured. We gain two points for having infant mortality rates for three years. We have credited ourselves with two points out of a possible four points for having the previous year's statistical report in tabular form printed in an annual report, but have deducted two points since our report does not contain an interpretative comment. I object strongly to this printed report being given so much value, since the printing of the statistical report cost \$150; the printing of an interpretative comment would have greatly increased the cost. This seems too large a sum to expend on an item of so little direct value to the inhabitants of a county, when the half-mill levy for health purposes yields comparatively small sums of money. I would much prefer to spend \$150 in giving free toxin-antitoxin administrations. However, Bernalillo County earns fifty-two points out of a possible sixty points allotted Vital Statistics.

Section B of the Appraisal Form is devoted to Communicable Disease Control, assigning 175 points to this item. Section 6 covers reporting. The standard for typhoid fever requires seven cases reported to each death. Albuquerque, however, is a hospital center for many smaller localities without hospital facilities, resulting in Albuquerque receiving the most serious type of case occurring in surrounding communities. Hence, our record for 1929 shows twenty-nine cases reported, with seven deaths. This gives us two points out of a possible four. With the case of diphtheria, twenty cases were reported, with three deaths. The standard calls for fifteen reported cases to each death, hence we rate one point of a possible four. However, I might call attention to the fact that in Albuquerque we accept no diagnosis of diphtheria unless it is supported by a positive culture report from the State Public Health Laboratory. Were we to accept clinical diagnoses by physicians, we should easily have enough cases of diphthe-



ria reported to entitle us to full credit. In measles, we earn full credit, but in whooping cough, with 669 cases reported and forty-two deaths, we earn two of a possible three points. Here occurs my second objection to the Appraisal Form. The ratio of reported cases to deaths is too high for rural health offices to reach if the state bureau is to continue its practice of charging to Bernalillo County cases of typhoid and other contagious diseases occurring elsewhere, but brought to Albuquerque for hospitalization. Since the majority of such cases are serious and most often fatal, it unduly increases our number of fatalities, thereby making it impossible for Bernalillo County to find the required number of cases reported to earn full credit. Yet with our practice of culturing the throats of all school children absent from school on account of sore throats, I do not believe we are missing many cases of diphtheria. With the use of the Widal reaction on all suspicious febrile disturbances in summer, I do not believe we are missing many cases of typhoid. Perhaps, if we were more careless about this point, and called every febrile disturbance in summer a case of typhoid, we should more nearly attain the required ratio.

Section 7 covers the keeping of suitable records of communicable disease. Bernalillo County wins ten points for the keeping of a card file with disease incidence correlated with other epidemiological information, such as milk dealers, schools, and such items. Another six points are earned by the keeping of chronological charts of cases by weeks, but in the year 1929 we lost six points for not keeping spot maps. These spot maps have been installed and 1930 will show our department earning these additional six points.

Section 8 covers control practices, applied to diphtheria. We earn two points for release of cases on cultures, and three points for furnishing antitoxin to physicians for cases or contacts. We lose, however, three points because, through lack of funds, the department is unable to furnish toxin-antitoxin free. We earn the entire twelve points listed under typhoid control, since, during the flood north of Albuquerque in the fall of 1929, free anti-typhoid vaccination was offered and accepted by 886 persons. Under smallpox control, we lose three points because the department is too poor to distribute smallpox vaccine free, although we do vaccinate all comers at the cost of the vaccine, and vaccinate many children free, especially in the country schools. We lost another three points because we cannot financially afford to give free distribution of sil-

ver nitrate to physicians practicing obstetrics, although we do furnish free silver nitrate to midwives. I rather doubt the propriety of this item, since there is no more reason for furnishing free silver nitrate to the practicing physician than there would be for a health department to furnish free chlorine gas to any municipality which might wish to chlorinate its water supply.

Under section 13, "Visits to Cases of Communicable Disease," Bernalillo County qualifies for all points possible. However, under diagnostic service, with a standard of fifty calls per 100,000 population, we fail to qualify for more than two points of a possible five, because the physicians of Albuquerque make their own diagnoses, in nearly all cases of communicable disease. If the Appraisal Form would credit the department with diagnostic service calls made to children reported by school teachers, who have no physician, and where the diagnosis is made by a member of the department, we should earn full value. We make the visits, but since they are not in consultation with a physician, we cannot, under the Appraisal Form, claim full credit.

Similarly, under section 15, "Hospitalization," we earn four points out of a possible sixteen awarded for the hospitalization of communicable diseases. There are neither hospital facilities for the contagious diseases, nor are there in existence laws which would require hospitalization, had we an hundred hospitals.

In section 18, "Immunization," Bernalillo County earns two points out of a possible thirty for immunization against diphtheria. The standard requires the immunization of twenty per cent of the preschool population and ten per cent of the school population. With an estimated four thousand preschool population, this requires eight hundred immunizations of preschool population. For school children, one thousand immunizations are required. In spite of repeated newspaper articles during the diphtheria season, as well as during the summer, as part of our effort to have children enter school protected against these diseases, two persons accepted toxin-antitoxin during 1929, a year of low incidence of diphtheria locally. In 1930, with a considerable number of cases early, we have had two hundred eleven take the inoculations. Hence the county falls down completely in 1929, and this failure cannot be charged to lack of effort on the part of the department. Due to the fact that the state furnished free anti-typhoid vaccine as a part of the flood relief problem, we are enabled to receive the sixteen points awarded typhoid vaccination. Thanks to the

compulsory vaccination law, we win the ten points awarded to smallpox vaccination.

The interesting fact is that Bernalillo County earns one hundred and nine points of the one hundred seventy-five points allotted to communicable disease control.

Division C is devoted to Venereal Disease Control. The standard of reporting calls for 400 cases reported for each 100,000 population. This would require 160 cases reported in this county, whereas thirty-eight were reported. This awards about three points to Bernalillo County. Five additional points are earned by the department's practice of furnishing approved arsenical preparations free to physicians upon request. No credit is earned by the county for clinic registration, clinic visits, or cases returned to physicians or clinics, due, first, to the absence of clinics in this county and, second, to failure of physicians to report to the department patients who have ceased treatment before being discharged as cured. Bernalillo County therefore earns eight of the possible fifty points allotted to venereal disease control.

Division D is devoted to Tuberculosis Control. One hundred points are allowed this item. Bernalillo County earns nineteen of these points, earning nine of the possible ten for reporting and ten for patient days in the hospital. Here, again, it appears that the standards set in the Appraisal Form are rather severe. The standard of field nursing service is 2,000 visits per hundred deaths, requiring 5,400 nursing visits in this county. This would be practically twenty nursing visits for each working day of a nurse, or, in other words, a full-time nurse working on tuberculosis alone in this county. This is obviously impossible with a half-mill limitation by law on health funds.

Under the heading, "Clinical Visits to Physicians or Clinics," it is impossible to get anything like accurate figures from practicing physicians as to how many visits are made to tuberculosis patients. Furthermore, with Albuquerque a health resort, we do not get incipient cases, but advanced cases. Nevertheless, the Appraisal Form demands that twenty-five per cent of hospital admissions must be incipient cases. Similarly, it demands that fifteen per cent of total admissions must be under fifteen years of age. These items are impossible of attainment in a community like Albuquerque.

Finally, until greater civic consciousness and more liberality on the part of the taxpayers can be aroused, it is impossible to provide open-air class-rooms, preventoria or day camps. This has been urged by the

Bernalillo County Health Department for five years, with no action resulting.

Division E is devoted to Health of the Child. To it is allocated 200 points. Bernalillo County earns five points for having more than ten per cent of the births occur in hospitals, and, while we do not claim that our midwives are under supervision comparable to that of New Jersey or Georgia, we have given ourselves the benefit of the doubt and taken fourteen points on the basis that only about sixteen per cent of the births in Bernalillo County are attended by midwives.

Naturally, we have not given ourselves any points for field nursing service. The standard of 1500 nursing visits per 1,000 live births would require 1,888 visits in Bernalillo County. Approximately 1000 visits are required to nurses' conferences. Therefore the infants of Bernalillo County require about 2,885 visits by or to the nurse.

In the preschool child subdivision of the Appraisal Form, 100 visits are required for each 1,000 preschool children. With an estimated 4000 preschool population, 400 visits from the nurse are required, and the children are expected to make 400 visits to nurse's conferences.

Under "Health of the School Child," the requirement is 200 nurse's visits per each 1,000 school children. This means, for Bernalillo County, 2000 nursing visits under this heading. Similarly, the school children should visit the nurse's conferences 2000 times.

Combining the various demands made upon the time of the nurse, the Appraisal Form requires that there shall be made in Bernalillo County, a total of 9,685 visits to children. Similarly, 3400 visits are expected to be made by children to various types of nurse's conferences. In other words, the nursing service must see 13,085 children each year, or one nurse working in Bernalillo County would have to meet slightly more than forty-two children each day. Then too, the nurse is expected to keep voluminous records and make many reports.

Heading F, "Sanitation, Food and Milk Control, Water and Sewerage," has 175 points.

Heading C, "Laboratory," is assigned 70 points. Bernalillo County earns only thirty-four points. We lost five points for examinations for syphilis, five points for examinations for tuberculosis, and eight points for typhoid examinations, because these examinations are chiefly made in the laboratories connected with sanatoria, hospitals, or in private laboratories, which seem unwilling to furnish us with these figures. We



will earn an additional ten points another year for milk examinations. Our ordinance required but two examinations each year, while, to meet the appraisal form, we shall need 260 examinations, or nearly five complete rounds of all dairies.

Heading H is "Popular Health Instruction," to which twenty points are assigned. Bernalillo County earns twelve of these points. Three points are again lost because we are too limited in finance to print and mail our monthly progress report. While we have a projector, it was not used last year, due to lack of time and assistance. Neither were any special demonstrations conducted.

Totalling all these various items as accurately and as conscientiously as possible, Bernalillo County earns only 428 points for the year 1929.

One making such a careful and critical study of the operation of a department for which he is responsible, has thrust into his consciousness certain reactions to the Appraisal Form. These reactions naturally will vary somewhat with the personality of the surveyor, somewhat with his mental outlook on life and his work, and somewhat with the particular locality in which he finds himself engaged in health work. There may be a feeling of chagrin over a low score attained, when every effort has been made to meet the local situations of importance, but yet, through the lack of budget provisions for adequate assistance, a poor numerical score is made. There may be the reaction of disgust and disdain toward the committee framing the Appraisal Form, and a wish that "those birds had to run my job a year and see where they would stack up." Back of this feeling lies the nebulous idea that somehow the Appraisal Form is not adapted to county health work as seen in the Southwest. There is the reaction too, that the Form is a dangerous weapon, in that it publicly states how poorly a department is being operated. There is the feeling of fear that unscrupulous politicians will utilize a low score as an excuse for removing a hard-working, conscientious health officer, to replace him with a political favorite. A poor score on the Appraisal Form may invite such action. There is also the fear that counties or other rural units that are poor financially and have struggled to provide a few thousand dollars for the support of a full-time health unit, will become discouraged when the unit scores poorly on the Appraisal Form, and will seriously consider abandoning the unit. It must be admitted that the Appraisal Form is a many-angled, many-sided instrument of torture.

In conclusion, what is my own personal reaction to the Appraisal Form? First, I believe it is a goal toward which every health department may well direct its efforts, realizing that it will require years before a creditable showing can be realized.

Second, I believe that it should be used by the health officer as a compass by which to steer his course. Departments which must operate on small budgets cannot hope to attain a passing grade on this form. However, this form will indicate when the department is placing too much emphasis upon certain items and at the same time neglecting other items.

Third, I believe the health officer should score his department achievements at the close of each year, plan for a better attack of the problem for the coming year, and then burn, destroy and totally annihilate the record. The Appraisal Form could be made a weapon of embarrassment to the health officer by any individual who had the ear of the public, or by any hostilely inclined newspaper. When all the records in the health department have been declared public records, with the sole exception of birth and death certificates, any individual may demand the privilege of reading the Appraisal Form. If his toes have been trodden upon, if his friend has not been given a position in the department, or if for any reason he is disgruntled at the department, a perusal of the Appraisal Form, provided he has the intelligence to fathom its mysteries, would furnish him enough ammunition to make all the artillery of Hell seem like a cooing baby's prattle by comparison.

## THE STATE TUBERCULOSIS ASSOCIATION

MRS. C. C. MEACHEM

Secretary, State Tuberculosis Association,  
Albuquerque

(Presented at New Mexico Public Health Association, Albuquerque, June 3 and 4, 1930.)

As secretary to the only active, state-wide agency assuming leadership in a campaign against what is perhaps the most important disease problem we have, I am especially appreciative of Dr. Luckett's invitation to talk on the subject of what cooperation the state tuberculosis association offers to local health organizations, public health officers and public health nurses.

When the American Public Health Association was organized, its original program was the control of communicable diseases and the suppression of epidemics. As tuberculosis is a communicable disease, it is therefore a public health problem. Since our association is chiefly interested in its

prevention and control, through an awakened public interest brought about by means of persuasion and health education, we feel we meet you on common ground.

Our three major activities are: the discovery of cases; the care and treatment of cases; building resistance and prevention through education. If we have efficient local health administration we will at once have successful anti-tuberculosis activities and results, for wherever the promotion of general health is attained it will most certainly be reflected in improved tuberculosis conditions both in the incidence of the disease and in the death rate. Our association's activities and interests cover the whole health field because, to be effective, we must contact the home, the school and the general community. We must locate the active cases of tuberculosis and know how many persons are living in contact with it and what the general living conditions are. As our committee and association members go about gaining this information they find themselves in close touch with and dependent upon the physicians of the community, the schools, existing health agencies and certainly with all interested, public spirited citizens. The county health officers and county public health nurse are invaluable to us in our case-finding and the development of our local program work. We hope always to be in complete agreement with them as to our activities and methods of procedure. Our aim as an association is to supplement and complete all health work and, in some instances, as a demonstration, to initiate clinics, open air schools, preventoria, etc., such activities to be later turned over to the proper health authorities when assured of their continuance. We have never, as an organization seeking to promote the general health of the citizenry of the state, felt any sense of rivalry with the state department of health. It is, after all, "our child." Some of you may know that it is a matter of history that it was our organization, known some eleven years ago as the New Mexico Public Health Association, which resulted in the establishment of the present state public health department and that our national tuberculosis association contributed \$10,000 to that end.

We feel that we are offering you most effective cooperation in our campaign of prevention of tuberculosis through education. We are striving to put health into education and education into health as the surest means of eventually eradicating tuberculosis.

An educator of national prominence in an address before the annual meeting of our as-

sociation in Memphis last month said: "The National Tuberculosis Association and its 1400 affiliated associations is a unique and valuable organization. It is out in 'no man's land' doing health work, cooperating with all the forty national groups and doing health education work in thirty-eight states." He credited us with building the fence at the top of the precipice instead of being ready with the ambulance at the bottom of the abyss.

Health in Schools: We are generally credited with being the pioneers in stressing the importance of health teaching in schools, and the formation of correct health habits and attitudes has been greatly stimulated by the distribution, through teachers and public health nurses, of our literature and materials of the modern health system of teaching daily health chores to children. From reports we have in regard to it from those using the method, we feel it outranks any other method for getting the young child interested in his own bodily health. We also supply nurses and teachers on request and sometimes without charge, with two very excellent text books for use in teaching health. There is a constant flow of health literature, posters and technical pamphlets from our office, in response to requests, which covers many lines of health work, including infant care and feeding, school health and also professional treatise. We give much publicity to statistics and general health information in which the public is interested. Our early diagnostic campaign, which has been carried on in April for two years, is primarily a campaign of education, several thousand pieces of health literature being sent out from the state association office to all health organizations and to many individuals. The pamphlet on "Childhood Type of Tuberculosis," which we sent to county health officers and to other physicians, has been one of the best pamphlets of its kind ever issued by the National Tuberculosis Association.

We claim another pioneer piece of work in the bringing of Dr. Glenadine Snow into the state for an eight weeks' course of health teaching, six weeks in the Las Vegas Normal and two in the Teachers' College at Silver City. Since that time there have been initiated in several institutions of higher learning definite courses in health education. We believe that in thus stimulating more health teaching in schools we are rendering a service to the work of the county health units.

Case Finding: In the discovery of cases of tuberculosis and contacts, our tuberculo-



sis committees and members of local tuberculosis associations have in many cases found it desirable and necessary to have free examinations for adults and children. In Albuquerque that has resulted in the establishment of a free diagnostic tuberculosis clinic and follow-up nursing service. Other types of disease were also found, many health problems met and adjustments of social conditions were made. This has brought about a cooperative effort on our part in the helping to finance more public health nursing service. We are contributing \$600 to the salary of a school nurse for Bernalillo county. We are, of course, limited in providing such help by the amount of the returns from our annual seal sale, as we have no other funds for our work. Our funds in Otero county will be used to help on the salary of the public health nurse recently provided for that county. Among the various services we offer the local health organizations in a cooperative spirit of helpfulness may be listed the following:

Help in the collection of facts and data about tuberculosis cases in towns and rural communities;

Assisting in the financing of more nursing service as outlined;

Reporting to the county health office cases of tuberculosis not under medical care or supervision;

Opening and conducting free diagnostic clinics as demonstrated, and arranging for physical corrections of other defects that may be found by the examining physicians;

Carrying on each year as a health education project the annual early diagnostic campaign all over the state and in localities where cooperation of the local health groups may be obtained;

Help in obtaining statistics on the tuberculosis situation in the state.

Making a study of existing laws on tuberculosis in the hope of obtaining necessary legislation for the prevention and control of tuberculosis;

Talking to women's clubs, luncheon clubs, church groups and school authorities on health education and local and state ordinances regarding promiscuous spitting, examination of food handlers and the pasteurization of milk;

Carrying on a campaign for a larger use of milk in the home, furnishing free milk in schools and homes and providing hot lunches in special instances;

Collecting facts from other agencies dealing with transient health seekers in regard to cost they are to the state. We feel such information will be useful in securing larger

appropriations from the legislature for health purposes.

We offer any community desiring such service, a visiting consultant tuberculosis specialist who will work with the county health officer and the local medical society in conducting a free diagnostic tuberculosis clinic. Through an arrangement with the National Tuberculosis Association we will be carrying much public health publicity in state trade journals, etc., on tuberculosis prevention and control, which should stimulate an interest in public health work. We maintain a poster service, a loan library, and a statistical service for your use. We offer assistance in getting hospitalization for indigent cases of active tuberculosis. We have supplied it in many instances in the past few years in Bernalillo county.

In the past eight years this association has raised, through the sale of the annual tuberculosis Christmas seals, the sum of \$38,774.12. Of that amount five per cent, or \$1,938.70, has been sent to the National Tuberculosis Association. They have returned many times that amount to us in service and free literature. The remainder, \$36,835.42, has been spent in this state for the cause of public health and through that the prevention and control of tuberculosis. Every county in the state has been served in greater or less degree, according to the number of seals purchased.

While attending the recent annual meeting of our national association, in Memphis, we had the pleasure of a conference with tuberculosis secretaries of the western and northwestern states and Mrs. Robert Hodgson, the head of your national organization for public health nursing. We asked her to outline for us the cooperation we might expect from public health nurses in our tuberculosis work. She frankly declared that we should have much help from you. She said that a public health nurse doing generalized nursing should know every type of communicable disease, of which tuberculosis is one, and should be ever on the watch for it as, many times, after some long siege of illness such as measles, pneumonia, or other sickness, children may, if subjected to infection, develop active tuberculosis. She said that if a nurse is looking after her field properly she is bound to find tuberculosis and should consider it a part of her duty to report it and to handle it as far as she is able, and to instill in all persons she contacts a particular health consciousness in regard to it. We have had this kind of cooperation from many of the public health nurses in this state, and hope for its continuance.

In conclusion, the policy of our association

has been to carry on our work in such a way as to meet with the approval of the local health agencies. We instruct our workers to the effect that no worthwhile anti-tuberculosis work can be carried on that does not rest on the foundation of the county health unit. We suggest to medical men who may seem in doubt about the value of public health and welfare work that we believe that the more organizations and individuals we can interest in talking and working for such programs as herein outlined, the better their own business will be, as it results on the part of the public, in a higher appreciation of medical service.

If you are not getting any of the cooperation we have outlined we will be glad to confer with you about the matter while you are in attendance at this meeting.

## DISORDERS OF THE PITUITARY GLAND,

With a Case Report

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Endocrinology, the study of the ductless glands, to some of us seems to be the most fascinating of all the branches of the medical sciences. The reports of investigators in this field working upon young animals, removing a gland here, transplanting a gland there, or even feeding glandular extracts, read like tales from the Arabian Nights. Dwarfs become giants, the moron becomes intellectual, and the male assumes the characteristics of the female of the species. Time is not allowed to delve into the many interesting experiments that have thrown so much light on this fascinating subject. Suffice to say that more and more facts are being added rapidly and constantly to the already amazing amount of literature on this subject. There is a remarkably close inter-relationship between all the glands of internal secretion, the secretory products of each gland seeming to have a definite controlling effect upon the activities of the others. The pituitary, or the hypophysis, with its multiplicity of physiological actions seems to be the keystone in the endocrine arch. It is most appropriately placed in the brain, from whence emanate the impulses that govern the body's actions. Disorders of this little gland offer problems that concern not one but many of the specialists. The internist and the pediatricist must awaken to the importance of dyscrasias of the pituitary, not only because it offers the solution to many obscure diagnostic problems, but because so much can be offered in the way of treatment when such conditions are early recognized. The surgeon is

the savior in those cases where a definite tumor or cyst is the cause of the trouble. Often the ophthalmologist is the discoverer of the disease, if it may be called that, because of the frequency of involvement of the optic tract from pressure of a pituitary tumor. The neurologist is consulted because of epileptic seizures, hemi-crania, and olfactory disturbances from pressure of cyst or tumor. The gynecologist and his collaborer, the genito-urinary surgeon, are consulted by obese young women who have become amenorrheic and by young impotent males. The pharyngo-rhinologist must be alive to the several manifestations of pituitary disease because of the frequent involvement of the sphenoidal sinus and the not infrequent epistaxis caused by pressure in the neighborhood of the gland. What is more important for this specialist to recognize is the occasional occurrence of pharyngeal rests of pituitary substance in the lymphoid tissue of the pharynx, the removal of which might have an important bearing upon the endocrine balance of the individual.

It is apropos at this time to review briefly the embryology of the gland and what is known of its physiology at the present time. There are three distinct parts to the pituitary, the anterior and posterior lobes and the pars intermedia. Embryologically the posterior lobe differs from the two other parts. The posterior lobe arises from the brain substance as an outgrowth from the third ventricle, and is composed of neuroglia cells and fibres. The anterior lobe and the pars intermedia arise from Rathke's pouch, an invagination of the buccal ectoderm. A portion of this epithelial structure develops into glandular structure with no excretory duct to form the anterior lobe. The other portion of this ectodermal pouch, the pars intermedia, has no definite glandular structure. It invests the neck and body of the posterior lobe. Little is known of the physiology of the pars intermedia, but it seems to be closely related in function to this lobe, and, although differing embryologically from it, the pars intermedia is to be considered from here on as a part of the posterior lobe. The physiological functions of the two lobes that have been definitely established are as follows: The anterior lobe, through its secretion, regulates and controls (a) the skeletal growth and (b) the function and development of the gonads and the secondary sexual characteristics. The posterior lobe's secretion regulates to a great extent carbohydrate metabolism, specifically glycogenolysis and carbohydrate tolerance, fat metabolism and depo-



sition. This hormone also causes contraction of the unstriated muscles, as found in the uterus, the intestines, and the blood vessels. There may be other functions pertaining to this gland but the evidence of such functions are so indefinite that they do not warrant mentioning. Certain it is that the pituitary is not alone involved in many of the physiological functions mentioned above. I mentioned early in the paper that there is a remarkably close inter-relationship between all the glands of internal secretion. The thyroid, and possibly the thymus, have much to do with the control of metabolism, with skeletal growth, and with sexual development. The pancreas and the adrenals are definitely concerned with carbohydrate metabolism. The unstriated muscle of the vascular system responds characteristically to adrenalin. The pituitary gland, however, is so intimately associated with the above mentioned systems and phenomena that constant and definite changes occur in these systems and functions with either under- or overactivity of the pituitary.

Perverted function of the gland may be limited to either one of the lobes or it may include both. This perversion occurs as either hypo- or hyperactivity. The lesions that cause these abnormal functions are many, but briefly the lesions found in the overactive gland are adenomatous hyperplasias, and in the underactive gland there are either cystic degenerations or atrophic changes from trauma, infections, or pressure from extra-pituitary growths. There is also the possibility of congenital hypoplasia, which consideration I have been unable to discover in the available literature. The clinical manifestations of these perverted functions can be easily correlated with the physiological functions of the gland. In some cases there is not the clear cut clinical picture of hyper- or hypofunction. There may be evidence of both types of dysfunction present in the same individual. This apparent confusion is dispelled with the realization that a hyperplastic gland invariably becomes hypoplastic, if the individual survives the period of hyperplasia. This phenomenon is in accord with the well known physiological law that prolonged stimulation ends in exhaustion. This law applies to glandular tissues as well as to muscle. The clinical pictures that result from abnormal activities of the gland vary with the age of the individual at the inception of the disease. When the anterior lobe becomes hyperactive during preadolescence, before the epiphyses have closed, there is a disproportionate overgrowth of the long bones

and a state of gigantism ensues. These individuals range in height from six and one-half to eight or nine feet tall. In the post adolescent type of this disorder the syndrome of acromegaly appears with enlargement of the acral parts, the tongue, the nose, the lips, the jaws, and the hands and feet. Hypoactivity of this lobe during the preadolescent period results in skeletal undergrowth with genital infantilism, but with adiposity. All grades of dwarfism and genital hypoplasia may occur depending upon the degree of glandular insufficiency and the age of the individual. The posterior lobe has much to do with metabolism and of a consequence we should expect marked metabolic disorders with lesions of this lobe. Hyperactivity of the posterior lobe results in pituitary glycosuria which closely simulates pancreatic diabetes with hyperglycemia, glycosuria, and a low carbohydrate tolerance. Conversely, hypoactivity results in a high carbohydrate tolerance, and in addition, a low metabolic rate and obesity. When the entire gland is in a state of overactivity there is a combination of gigantism or acromegaly with glycosuria, the so-called acromegalic diabetics. Manifestations of underactivity of the entire gland are many and varied, and no doubt many cases that have been the rounds of doctors, complaining of some vague metabolic or sexual symptom complex, were suffering from some degree of hypopituitarism. It is this type of disorder that I wish to describe more fully this evening and to present to you a case which exhibits many features of a certain type of hypopituitarism, the so-called Frohlich's syndrome or dystrophia adiposa-genitalis. Hans Lisser has written an excellent description of the clinical picture of this condition in Blumer's Diagnosis; I have taken the liberty of quoting him freely in the following pages.

This syndrome is of frequent occurrence, and, as with other disorders of the gland, varies widely in its manifestations, depending upon the severity of the disease and the age of the individual at the inception of the disease. Three types of this syndrome are recognized depending upon the age of the individual; namely, childhood, adolescent, and adult. Clinically the disorder is characterized by (a) a more or less circumscribed adiposity of feminine distribution, as seen in eunuchs, which is a sine qua non of the disease; by (b) arrested growth or atrophy of the sexual apparatus and absence or retrogression of the sexual characteristics, depending upon whether the disease originates before or after puberty; by (c) metabolic disturbance such as low metabolic rate, in-

creased sugar tolerance, and occasionally polyuria and polydipsia; by (d) neighborhood symptomatology, if there is pressure from tumor or cyst on adjacent brain substance, as manifested by temporal hemianopsia, epileptic seizures, optic atrophy, headaches, etc. The clinical triad of pronounced and peculiar adiposity, genital infantilism, and high carbohydrate tolerance is diagnostic. The fat is generally distributed including the internal viscera, but the configuration is characteristic, which in the case of the male results in a feminized appearance. There is a definite predilection for the breasts, the abdomen, the mons veneris, and the thighs. The child is seldom fat at birth unless the disease is congenital. There is usually a certain definite time in childhood, most often during the latter part of the first decade, when a sudden and steady gain in weight is noticed. Not infrequently this follows some infection, trauma, or operation on the pharynx. The skin is usually dry and there is little tendency to perspiration. There is little or no hair on the body. The hands are disproportionately small in comparison with the rest of the body; the fingers are characteristically tapering. The mental capacity of these children varies, but usually they are normal or they may be somewhat precocious. The mental disposition is usually predominately cheerful and we are accustomed to think of fat people as being jolly and good natured. When the disease begins in childhood these children never gain sexual maturity. The external genitals remain infantile. The penis is minute and the testicles are about the size of small peas, and are often undescended. The same lack of development is seen in the female. The breasts may become huge, but they contain very little breast tissue. The beard does not grow in the male and the axillary and pubic hair is extremely sparse or absent. Libido sexualis, ejaculation, and potentia continue absent. Menstruation fails to appear or is long delayed, and then scanty and irregular. There is an increased desire for sweets and the appetite is usually excellent. Carbohydrate tolerance is increased; as much as 200 to 400 grams of glucose may be consumed without hyperglycemia or glycosuria. The basal metabolism is reduced and there is often a subnormal temperature. If the disease begins after the appearance of the secondary sexual characteristics there will be a retrogression and atrophy. Sexual libido and potency will diminish and in the female the menses will become scanty and irregular, or may disappear entirely. The hair on the body will tend to revert to the type of the oppo-

site sex; the female will grow a moustache and hair on the chin and on the thighs and breasts. There may be a sudden gain in weight with a pronounced accumulation of fat around the middle, the contour of the arms and lower legs remaining normal. The other metabolic disturbances as noted in the childhood form are found in these adolescent and adult cases.

#### CASE REPORT

A white boy of 13 years complained of severe headaches, vertigo, precordial pain, and a rather pronounced gain in weight. The gain in weight began 3 years ago following a tonsillectomy and has been more rapid in the past year. He weighed 95 pounds in 1929, following an attack of scarlet fever. At present he weighs 134 pounds. The headaches were first noticed at the end of the last school year. They have become more frequent and more severe, resembling migraine in that there is nausea and frequently visual disturbances described as bright dancing lights and circles in front of eyes. The cephalalgia, however, is not characteristically unilateral, but more often bi-temporal and supra-orbital. Shortly after the onset of the headaches he complained of attacks of pain over the precordium, associated with gaseous eructations and vertigo. On July 8 he suffered from an attack of sharp pain in the right lower abdominal quadrant associated with nausea and headache. There was no emesis nor diarrhea. Examination at this time revealed a subnormal temperature and a white blood cell count of 6,300. There was marked tenderness over McBurney's point with muscle spasm or rigidity. There was a slight amount of rebound tenderness and questionable cutaneous hyperesthesia. The pain was aggravated by flexion of the thigh upon the abdomen. This attack lasted 3 days. There was a less severe recurrence on August 9. This is a noteworthy symptom because it is not an uncommon symptom in cases of pituitary insufficiency. At operation no disease of the appendix has been found. The pathology of this complaint has never been explained.

Sexual hypoplasia and lack of hair on his body have been noticed. His brother, 2 years younger, is better developed sexually than is the patient. Mentally the boy is normal. His disposition is unusually cheerful and he is well behaved. There is no hypersomnia nor lethargy. He was born at full term; there was a normal delivery. He was breast fed for 10 months and appeared to be perfectly normal until the tonsillectomy when he was 10 years old. The only previous sickness was pneumonia when 4 years old, measles when 11, and scarlet fever when 12. These latter two diseases were after the onset of the obesity. His appetite is excellent with a pronounced taste for sweets. The family history is irrelevant except that it is interesting to note that his paternal grandmother, aunt, two uncles, and his father suffered from frequent attacks of migraine. There is also a tendency to obesity on the paternal side of the family.

Examination reveals an extremely healthy appearing white boy of 13 years. He is slightly above the normal stature for his age. The height is 61 inches; the weight 134 pounds. The disposition is cheerful and cooperative. The skin is fair, smooth and dry. The temperature is 98.4 degrees by mouth. The pulse is 84; the respirations are 18 per minute. He is noticeably obese with a typical feminine distribution of the fat, with accumulations



in the pectoral regions, the mons veneris, the abdomen, the buttocks, and the thighs. There are no abnormalities of the skull or the face. The features are regular. The eyes are normal with regard to the movements of the globes and the pupillary reflexes. Ophthalmoscopic examination reveals normal fundi except for excessive fullness of the veins. Rough perimeter tests show no limitation of the visual fields. The teeth appear normal and well developed. There is no abnormality of the palatine arch. The tonsils have been removed and there is no inflammation of the pharynx. The voice is not high pitched. There are no lymphadenopathies. The thyroid is not enlarged. The thorax is normal and no evidence of disease can be found in examination of the heart and lungs. Fluoroscopy of the chest shows no abnormality of the mediastinum, such as an enlarged thymus or thoracic goiter. The pulse is of good volume, being regular and rhythmic. The blood pressure is 110-70. The abdomen is normal. The external genitals are rudimentary. The penis measures one inch in length; the scrotum is flush with the perineum; the testicles are pea size and incompletely descended. There are but 4 or 5 pubic hairs and the axillary hair is completely absent. The thighs are disproportionately fat as compared with the lower legs and ankles. The hands are pudgy, but the fingers taper toward the distal phalanges. The deep tendon reflexes are normal.

The urine is normal. The basal metabolic rate is minus 14 per cent. The carbohydrate tolerance is increased; the ingestion of 120 gms. (2 gms./kilo) of glucose was followed by a very moderate rise in the blood sugar, from 100 mgms. to 115 mgms. at the end of 2 hours. No reduction of Benedict's solution occurred at any time during the test. The Wassermann is negative. Stereo x-ray plates of the skull reveal a small sella turcica in which the anterior and posterior clinoid processes nearly meet.

#### COMMENT

This individual exhibits many of the symptoms and findings characteristic of the clinical entity called dystrophia adiposogenitalis which is caused by an underactivity of both of the lobes of the pituitary. The hypofunction of the anterior lobe is manifested by the sexual infantilism and the lack of secondary sexual characteristics; the hypofunction of the posterior lobe by the obesity, the increased carbohydrate tolerance, and low basal metabolic rate. There is an absence of neighborhood symptoms that result from hypertrophy of the gland either from tumor or cyst, or from any extrasellar tumor. There are no evidences of previous hyperfunction with subsequent exhaustion. By the process of exclusion, I believe that the lesion is that of inherited hypoplasia, because of the familial tendency to migraine and obesity, or to an atrophy from a cystic degeneration. There is also the vague possibility that a remnant of the gland remained in the pharyngeal cavity and was unknowingly removed at the time the tonsillectomy was performed.

## CASE OF FOREIGN BODY IN PELVIC REGION

J. R. SHUPE, M. D.  
Phoenix, Ariz.

(Discussion before Staff of Good Samaritan Hospital, at meeting of Jan. 27, 1930.)

Mexican boy, 11 years of age, was in good health until Dec. 25, 1929, when he began having some dull aching in right lower quadrant and in right hip region. I saw patient on Dec. 27th and at that time there was so much pain in right hip region that he had great difficulty in walking and held right leg continuously flexed. At that time it was thought that there might be some pathology in the bony portion of this side, but upon x-ray examination, report was returned "no pathology noted." But upon examining the film, I could see the presence of a foreign body which appeared to be in the hip joint, and after several more x-ray observations, this object appeared to move from place to place. Another roentgenologist was asked to check up on the previous seven or eight findings, and after fluoroscopy, filming, giving barium meal and x-raying again, it was reported that foreign body, in shape of nail, was located in the appendix. Following this, after patient had been in hospital from Jan. 5th, operation was done on the 19th. Pin was found, head down, and point had penetrated the appendix about two inches from the tip, and into the soft tissues of the right pelvic region, where there was a large area of induration. This area was opened and some pus oozed from the incision. It had an odor not unlike the presence of colon bacilli.

Physical findings were negative except marked pain and the tenderness in right pelvic region, palpable mass, and right leg flexed. Temperature around 100 while in hospital before operation; white count 17,200.

#### DISCUSSION BY DR. E. PAYNE PALMER

When Dr. Shupe showed me the x-ray films of this case and asked me what I thought of the location of the object, I told him that because of the different positions of the object in the several pictures, I would advise a barium meal and observation of the object under the fluoroscope to see if it was in the appendix.

Eight years ago, a girl, eighteen years of age, was brought to me by her mother because of increasing discomfort in the right iliac region which had been present for three years. She was well nourished and had always enjoyed good health except an attack of measles and scarlet fever at 10 and 12 years of age.

A general physical examination gave normal findings except a tenseness of the lower portion of the right rectus muscle and some tenderness on deep pressure in the right iliac region. An x-ray examination was advised to assist in the diagnosis of appendix disease but was refused, so an operation for removal of the appendix was advised and performed. The appendix was found in normal position freely movable, hyperemic, thickened and unusually firm. During manipulation incident to its removal, a foreign body was detected in its lumen. After the appendix was removed it was opened and found to contain an ordinary pin with the head near the distal end of the appendix. The operation was completed and the patient made a rapid recovery with no further abdominal discomfort. After the operation, when she was told of the pin being in the appendix, she recalled having swallowed a pin a short time before the onset of her abdominal discomfort, but had forgotten about the pin being swallowed.

Six years ago I was called in consultation to

see a girl nineteen years of age who had been run into by a train, while riding in an auto. She was severely injured and many bones were broken. During the course of x-ray examinations, the shadow of a pin was discovered in the picture taken to determine the condition of the pelvic bones. Later, a barium meal examination of the gastro-intestinal tract showed the stomach and duodenum normal in position, outline and motility. The appendix was shown imperfectly filled, lying below the cecum and slightly tender to manipulation. In twenty-four hours the colon was outlined with normal appearance and the appendix was lying below the tip of the cecum. The pin was lying in the appendix, moving with the appendix and remaining in the same place during the various radiographs. The patient's mother remembered that she swallowed a pin when she was three years of age. She had always had good health with no abdominal discomfort. She made a slow recovery from her injuries, all of the fractures uniting with the bones in good position. With the knowledge of the pin in the appendix, she was fearful of an acute attack of appendicitis. There was some tenderness over the appendix on palpation. After the patient had fully recovered her normal health an operation was requested and performed. The appendix was found to be elongated and unusually thick and firm. The pin could be felt in the lumen of the appendix with the head near the distal end. Following the operation she had no untoward symptoms and has enjoyed good health since.

I have operated cases in which after the removal of the appendix, we have found pieces of bone, seed and hair.

## A DELEGATE'S VIEWS OF THE A. M. A. CONVENTION

R. J. STROUD, M. D.  
Tempe, Ariz.

(Presented before the Maricopa County (Ariz.) Medical Society, Sept. 18, 1930.)

If you wish to visit the complete exhibits of the American Medical Association, that is, the scientific exhibit and the commercial exhibit, you had better leave your delegate's credentials at home.

While I deem it an honor to have been chosen as a delegate to the 1930 convention of the A.M.A. it becomes a rather irksome duty to serve when so many things of so much interest are going on.

To begin with, the delegates were in session on Monday morning, again all day Tuesday, and again all day Thursday, so that the time to see the exhibits and the other parts of the entertainment was so limited that not all of the ground was covered. Friday is a bad day all around as the exhibits are beginning to move out.

The three outstanding movements in the House of Delegates this year were the taking up of the Veterans' Bill which was vetoed by the president; the manufacture of intoxicating liquors, which Doctor Morgan took up in his message but which by previous motion cannot be discussed in the house. Doctor Morgan gave the last part of his speech in executive session. The alco-

holic question therefore was not settled because nothing could be done at the secret session. In those states where it is legal to prescribe 100 pints of whiskey or other alcohol every three months, it is felt that the placing of a diagnosis on a prescription blank violates that part of our profession which says that the relations of a doctor and patient shall be kept secret.

It is hard to conceive of a lawyer having any part of his private dealings with a client aired in open court, but a prescription on file may be read by any so-called prohibition agent and information gained may be peddled by him or used by him for his own purpose. It also helps make liars of the profession. The same is true when a diagnosis has to be made on a narcotic prescription.

It is agreed that medical men allow legislatures to tread upon their individual rights, whereas, legal men see that their rights are not tampered with. In fact, in America today the legal right of an attorney who has a presumably guilty client are seemingly upheld meticulously in a court of law. There has never been anything but criticism when the rights of a priest and his confessional are invaded, and yet medical men are given secrets which no doubt are not brought out either by a confessional or an attorney. The confidence in him is the greatest.

In the proportion of money to be spent by the Federal Government on non-service diseases, the pork-barrel legislation was vague. The result of this type of legislation would not only be communism but would set up a favorite few above the populace. One of the American Legion heads states that the A. M. A. could better treat with the American Legion, which was open to conviction, than to enter the back door without consulting parties of the first part and to use a bludgeon.

It seems that when any question of legislation is brought up the A. M. A. feels that all has been done through its congressional representatives that can be done on anything relating to the medical profession. This was challenged by various delegates, especially the American Legion champion.

The third highlight was the fact that the editor of the A. M. A. Journal took occasion to reprimand the incoming President concerning the manner in which he presented his message to the press before the editor censored the proposition. This was an unfortunate occurrence and several of the medical men, in applauding this challenge, showed that even medical men may lose their sense of proportion when goaded by flippancy and rhetoric.

I do not know the internal struggles of the



A. M. A., but I do know that a mere delegate comes away with a bad taste in his mouth towards the officers of an association who will allow or suggest that such remarks be made by a man of the A. M. A. whose articles are not censored by anybody.

The high cost of medicine was touched on by Doctor Harris who proclaimed that medicine is being besieged on every side by sources which are detrimental to medicine, which are daily becoming stronger and stronger. This will take place unless individual members take steps to overcome it. Doctor Morgan stated that physician's bills make up slightly less than twenty-five per cent of medical care. About the same amount as that is spent on medicine and medical supplies. Hospitals take thirty per cent and the rest is used in other expenditures. The expenditure for the prevention of disease is only one-thirtieth of the total, which is too small compared with the vast amount expended for cure. The physicians, in giving charity, are themselves giving as much as possible. Sickness bills differ from any others because they occur uncertainly and also so unevenly. The high cost of medical care has not prevented the public from buying automobiles, radios, washing machines, sewing machines, electrical appliances, homes, et cetera, on the time or partial payment plan, and some of those who complain of the high cost of medical care feel the pinch only when the doctor asks for his mite against the dunning of these various agencies.

The Federal Government at the present time has developed a tendency to assume all or a major part of the responsibility in the conduct of human affairs and should be frowned upon in this endeavor by all right-thinking people.

The radio boon and the allowing of irresponsible people to disseminate misleading, pernicious and even obscene statements over the air in matters not particularly for the health of the people but for the promotion of the selfish interests of the broadcasting station, should be looked into.

Examinations of drivers before allowing them to become responsible persons in automobiles should be held and renewed every year, and each county should be taken care of by a corps of officials appointed by the government of the state.

Dangerous toys, especially those little nicknacks found in the playthings of children, constitute a real hazard to the health of a nation. It was stated by Doctor Hubert Work that the time is coming when the individual physician will have to begin

again to cooperate and teach the matter of prevention of disease, that is, that he should give advice on health matters and preventions whenever he has an opportunity to do so. No sense of medical ethics should keep him from discussing with his patients the benefits of the developments along the lines of prevention of disease.

Doctor Stone paid his respects to the faddists in diet, the protein and starch misfit, etc. He pointed out that a fairly strong race of people had arisen from the eating of meat and potatoes together and often. He took occasion to deal with the vegetarian, the whole-wheat bread faddist and the serious mistake of the American people using double the amount of sugar they need. Dr. W. J. Mayo pointed out that emotions may directly cause disease and that there may be something to the popular fiction that the heart is the organ of love. Too stern a control of the emotions throws too much strain upon the musculature of the heart. The same old cries of the neurologists concerning the employment of operative work to overcome symptoms and too numerous operations and giving too many pills to overcome them instead of going to the cause was taken up. In the allergic diseases, hay fever and asthmatic patients should not marry people who have like tendencies, for their children are doomed to be sensitive individuals.

Electro-therapy is beginning to replace the introduction of malarial organisms in the treatment of paresis—the danger of the malarial method being great, while the same amount of heat can be added through diathermy, or other electro-heating apparatus.

Doctor Lorenzo Bohler showed, by motion pictures taken in his own hospital, a certain method of reduction in cases of partial and complete fracture. He showed patients, for instance, with fractures of the ankle joint who could be discharged and within two or three days walking about without the aid of cane or crutch. In fractures below the knee, the reduction and his method of incorporating wire through the bone often allows the patient to walk out unaided.

One of the parts of the entertainment was a dinner given by the Michigan State Medical Society to the officers, directors, and delegates of the A. M. A., at the Detroit Yacht Club. This was known as a Past President's Dinner and probably brought together more eminent names in medicine than has ever been brought together in one small gathering. In the late afternoon the delegates were invited to visit the Yacht Club and were taken around Belle Isle in speed boats. Several of the doctors owned various kinds

of craft and this feature and the dinner somewhat made up for the hot day spent in rooms abominably stuffy, according to our Western ideas. The fact that differences of opinion were aired in the House of Delegates shows that the A. M. A. is still a very lively organization and advancing with the times.

## PROCEEDINGS OF THE SIXTEENTH ANNUAL MEETING OF THE MEDICAL AND SURGICAL ASSOCIATION OF THE SOUTHWEST

El Paso, Texas, Nov. 6, 7 and 8, 1930.

This meeting, which proved to be the largest and most successful one ever held in the Southwest was opened at 10:20 a. m., November 6, by the president, Dr. E. Payne Palmer of Phoenix. About 150 were in attendance at the opening session. Without preliminaries, the president introduced the first speaker on the Scientific Program,—Dr. Jim Camp of Pecos, Texas, who read his paper on "Fractures as Seen by the General Surgeon." He described the types of fracture encountered most frequently, and the methods of treatment which have been found to be most efficient in the hands of the general surgeon.

Dr. Walter C. Alvarez, of the Mayo Clinic, Rochester, Minn., occupied the remainder of the morning session, giving a very able and intensely practical talk on "Treatment of Gastro-Intestinal Disease." He dwelt at some length on nervous indigestion, insisting that careful physical, x-ray and laboratory examinations should be made before making this diagnosis and before using psychotherapy. He emphasized the necessity of a meticulously careful history, with attention to minute details. He then discussed several types of organic diseases and their management. The social status must be considered before laying down rules for treatment of chronic illness, such as ulcer. Many of these are better handled by ambulant treatment.

At the close of his talk, Dr. Alvarez showed two motion pictures, one of the stomach and another of the intestinal movements, illustrating the physiology of these structures.

At the first Clinical Luncheon, on Thursday, at the Hotel Hussmann, Dr. Philip H. Kreuscher spoke on "Backache." This talk was illustrated by lantern slides, showing various deformities and lesions of the spine which might produce backache, and also calling attention to other conditions, other than those in the spine, which might be responsible for this symptom.

At the afternoon session, the first speaker was Dr. Joseph Brennemann, of Winnetka, Ill., whose address was on "The Acute Abdomen in the Child." Beginning with atresia of the esophagus, he discussed the various types and locations of obstructions. He then discussed two inflammatory conditions—appendicitis and peritonitis—and then the respiratory diseases which might be mistaken for abdominal conditions.

Dr. Philip H. Kreuscher, of Chicago, then gave his second address on "Fractures Into Joints." This was freely illustrated by lantern slides of the injuries and the methods of treatment advocated.

Dr. Alton Ochsner, of New Orleans, gave a masterly summary of "Acute Craniocerebral Injuries," outlining the types, the symptoms, the methods of diagnosis, and the treatment. The brief, pointed and concise method of presenting his facts, without

overlapping and including everything of importance, made this probably the outstanding address of the conference.

Dr. Robert S. Flynn, of Phoenix, Ariz., gave a very excellent summary of the "Management of Diabetic Coma." His technic of presentation was similar to that of Dr. Ochsner and much favorable comment was heard about this talk.

Adjournment to the evening session.

At 6:30 p. m., the El Paso County Medical Society entertained the Association at a dinner in the Hotel Hussmann. This was advertised as an "Informal Buffet Supper," but was served as a regular dinner. The attendance was disappointingly small at this meeting, scheduled to be the regular host-guest meeting for the men. Dr. Paul Gallagher, president of the El Paso County Medical Society, presided. Following the dinner, the evening session convened, and Dr. Gallagher introduced the president of the Association, Dr. E. Payne Palmer, who gave his presidential address. This was a serious handling of problems with which the organization should deal. It appears in this issue of *Southwestern Medicine*. Following its deliverance, motion was made that a special committee be appointed to study the recommendations made and bring resolutions for or against them to the business meeting on Saturday. This motion prevailed and the president (Dr. Palmer) appointed Drs. W. W. Waite of El Paso, C. N. Ploussard of Phoenix and M. B. Culpepper of Carlsbad, as this committee.

Dr. James M. Martin of Dallas, Texas, then gave his address on "Treatment of Cancer of the Lower Lip by X-Ray." This paper was quite dramatic in its statistical data showing 100 per cent cures in superficial cancer of the lower lip, 80 per cent cures in cancer extending into the deeper structures of the lip but without glandular metastases, and no recorded cures in lip cancer which had reached the stage of metastases. This paper was illustrated by a series of lantern slides, showing photographs before and after treatment, and by motion pictures showing many cases.

The Lewis Cancer Film, sent by the American Society for Control of Cancer was then shown as the closing feature of the evening program. This is a very excellent film of cell growth, motion and function.

On Friday morning, the most interesting feature of the program was shown. This is the Movietone film of Laparotrachelotomy, with Dr. Joseph B. DeLee as the speaker. This was shown in the Plaza Theater at 8:30 a.m., and occupied about one hour. Dr. DeLee explained the development of this operation, its indications and difficulties, using charts, models and skeleton demonstrations. Then the operation was shown in every detail, from the first incision to the last stitch, followed by further explanatory talks by Dr. DeLee. Every advantage to be enjoyed from a personal lecture by Dr. DeLee combined with an operative clinic, was presented by this demonstration. The Association owes a debt of gratitude to Dr. Davis for bringing this feature to them.

At the opening session in the Hotel Hussmann which followed immediately upon adjournment of the meeting in the Plaza Theater, Dr. Joseph Brennemann gave his second talk, on "Observations in the Treatment of Empyema in Children." This talk was devoted chiefly to the closed method of drainage which was advocated for small children and infants, though not for older children.

Dr. George Herrmann, of New Orleans, then gave his first address on "Diagnostic Criteria of

(Continued on page 554)



## FLOOD RELIEF IN NEW MEXICO

PAUL S. FOX, C. E.

Chief, Division of Sanitary Engineering and Sanitation of New Mexico

On August 13, word was received late in the evening that San Acacia, San Marcial and other towns in the Rio Grande Valley were flooded. The writer secured a supply of chloride of lime and left immediately for the flooded area. The small village of San Acacia had been covered with from two to three feet of water. The residents had had only a few minutes warning and, as a result, they were able to save practically none of their belongings. The angry waters of the Rio Grande had backed up behind a highway bridge just above the village; when the bridge failed there was a rush of water which was sufficient to overtop the dikes and it was only a matter of a few minutes before the village was inundated.

The area affected was a strip of river valley varying from two to five miles in width and about fifty miles long. A large portion of this valley land was under cultivation. All told, about 350 families were seriously affected by the flood. The devastation was tremendous. Adobe houses crumbled like a lump of sugar in hot coffee. Harvested crops were carried away by the swift current. Corn fields were flattened. New channels of the river selected choice farms for their courses. Irrigation ditches and diversion works were demolished. Drain ditches were filled.

On September 25, another flood of greater proportions came down the Rio Grande. Areas left untouched by the first flood were completely wiped off the map. What was left in San Acacia was carried away and the main channel of the river cut through the side of the village. The entire area was covered with from two to five feet of sand and silt. Railroad service was paralyzed as approximately fifty miles of track was damaged, about five miles completely gone and two bridges seriously damaged. Highway transportation was demoralized on account of bridges being washed out and grades being flooded or badly washed. In the first flood, San Marcial suffered only from surface run-off which was unable to get into the swollen river; however, in the second flood, the dikes gave away and the river came right through the town. River sand and silt was deposited to a depth of about five feet on the main street. In places one can walk on the sand and step upon the roofs of one-story houses.

In the second flood, from twelve to forty-eight hours warning was received that the high water was coming down the river and

all residents had ample time to move to higher ground. As a result, no lives were lost and a large proportion of personal belongings were saved.

A passenger train carrying seventy passengers and crew was marooned between two washouts. Within one hour after the passengers were removed, the site was under five feet of water. The crew, however, stuck to their posts and it was three days before they were rescued.

Fortunately, or unfortunately, there was only one water system affected by the first flood and that was the railroad supply at San Marcial. Perhaps half of the population derived their supply from this system. The well was of the large dug type with solid masonry walls. Flood waters came very close to the top of the masonry curb. To all appearances no flood water gained entrance to the well, but, as a precautionary measure, the well was treated daily with a twelve ounce can of chloride of lime. In all other flooded areas, water was obtained from sand points and, in a few cases, dug wells. All dug wells were cleaned where necessary and dosed with chloride of lime.

Even the worst of disasters offer some amusing incident. This was no different. This particular well was not in the flooded area but it had been filled with surface water following a severe rain. None of the family was at home, but one of the relatives was present when the writer came along. Explanation was made regarding the danger from the well water and the well was "shot" with a liberal dose of lime. Instructions were left to the effect that if, after a few hours the water tasted too bad, a large amount of the water in the well could be pumped out and gain the advantage of dilution with ground water. A few days later the writer was told that his method of sterilizing wells was no good and that the best thing to clean up a well was a quart of milk. The owner, upon coming home, found the water in his well rather tasty so he proceeded to pump out the water and clean the well. He found an empty milk bottle in the bottom. The relative, hearing of the incident, recalled seeing me pour a white liquid into the well and since there was a milk bottle in the well they concluded I must have poured in milk. The owner said the water in the well was "sweeter" than it had ever been before. Perhaps the cleaning was useful as well as the "milk."

In the refugee camps in the foot-hills, water from deep drilled wells was available. However, with several families living in each house and many families living in tents supplied by the Red Cross, sanitary conditions

were not the best. Toilet facilities were hastily provided where they were not already available, and all toilets were dosed daily with ch'loride of lime. The amount of lime used daily may be questionable as to its sterilizing value but it was certainly of value as a deodorant and fly repellent.

Following a period of excessive rainfall, millions of flies were present and it seemed that they all swarmed into the refuge camps. In homes where there were sick people or infants, screens, netting and fly tox were distributed. An effort was made to control fly breeding in corrals and barnyards, with borax. It was quite successful after the first frost. By that I mean that the number of flies did not appear to be diminished until the frost, yet in the places treated, no larvae were found.

The fly control work was done in cooperation with the County Agricultural Agent. In the vicinity of San Marcial there were large areas of land lower than the river and these places were filled with flood water. Since it was impossible to drain these low spots without pumping, the water soon clarified and, in due course, mosquitoes were breeding rapidly. Such a large area was covered with water that no attempt was made to control their breeding. Casual inspection at different times disclosed no anopheles, although we have every reason to believe that they are present in that locality.

Following the first flood in San Marcial there was considerable standing water in all parts of the town. This soon became stagnant and the odor which emanated was very rich. These areas were covered with a heavy creosote from the railroad wood-treating plant. As yet I have not decided whether this was successful in keeping the odors from coming from the decomposing vegetation or whether the creosote smell was more pleasing to the nostril. Anyway, this was quite successful until the second flood came along and washed all of the creosote down into the Elephant Butte Reservoir.

In this disaster, as in all others, the possibility of disease, and particularly typhoid fever, was the menace which hung over the entire area. As soon as possible a supply of vaccine was procured and all members of the medical profession in the valley were pressed into service, and after the initial excitement was over even the writer was scrubbing arms and sterilizing needles. About 1800 persons received at least one shot and probably sixty per cent received the full three shots. A total of five cases of typhoid developed in the area. One of these

was sick before the first flood hit, one was a contact from this initial case, and the others evidently picked up the infection in the flooded area. There was one death.

In cooperation with the Red Cross, two of these typhoid cases received hospitalization and it was necessary to pay the funeral expenses of one case. Hospital care and funeral expenses were shared equally by the Red Cross and the Bureau of Public Health.

The American Red Cross cannot be too highly praised for their prompt assistance in this disaster. Immediately after the flood occurred the national organization authorized the local chanter to use up to \$500 for emergency relief. Within a few days a representative of the national organization was on the job to take care of rehabilitation. Following the second flood, food supplies in San Marcial were very low and it was necessary to haul in supplies by truck. A commissary was established and the entire population was fed for several days until the local merchants were able to get in supplies.

The Red Cross secured some 150 tents which were supplied to those families who lost their homes. Later assistance in the form of lumber and cement was given to aid these folks in rebuilding their homes. In the San Marcial area, many families had left just before the flood on account of the Santa Fe moving its division offices. After the flood the railroad decided to abandon the Harvey House and round house so that there is little employment left for anyone except some work on the section gangs. As a result of this decision, many families were forced to move elsewhere to find work. The Red Cross was instrumental in locating work in other places and assisting the families in moving.

A few words of praise must be given to the division officials of the Santa Fe Railroad. In spite of their many troubles and worries, they were never too busy to give all assistance possible in the emergency.

Mr. R. G. Hosea, of the Middle Rio Grande Conservancy District, has recently made a study of the flood flows in the Rio Grande and his paper was given before the New Mexico Section of the American Society of Civil Engineers. The summary of his paper will be of interest.

"(1) The Middle Rio Grande Valley lies under the continual menace of floods in the river, not only as a result of melting snow in the mountains of Colorado, but as a result of summer and fall rains on any or all of a number of normally dry tributary arroyos.

"(2) The flood of September, 1929, is typical of the latter condition and was



caused by a storm centering about the area from the Jemez Mountains to the Sangre de Cristos, east of Santa Fe. The maximum rainfall in this area appears to have been about four inches in the three day period, September 21 to 23, 1929. At Albuquerque the rainfall, during the three day period, September 21 to 23, 1929, of 3.1 inches, was probably the maximum precipitation of record during a similar period of time. The total rainfall for the month of September exceeded this amount only twice during the period for which records are available; namely, 1850-56 and 1889-1929, (with a few months missing), a total of 54 years.

"(3) The resulting flood in the main river originated almost entirely below Embudo. It reached the magnitude of 10,000 to 11,000 second feet at Cochiti, and the maximum flow of perhaps 20,000 to 25,000 second feet between San Felipe and Bernalillo, due to the more or less simultaneous flooding of Santa Fe Creek, Galisteo Creek and the Rio Jemez.

"(4) Below the mouth of the Jemez, the Rio Grande overflowed its banks in many places between that point and Albuquerque. Due to that fact and the flattening of the flood peak as it passed down the valley, the rate of flow decreased until, at the mouth of the Rio Puerco, only about 10,000 second feet is indicated. Such a flow would have passed through the San Acacia to San Marcial area almost unnoticed, but enormous contributions from the Rio Puerco and the Rio Salado created a flood peak that was probably greater than any heretofore recorded. The extreme importance of flood control on these streams is strongly emphasized.

"The Puerco and Salado are evidently the greatest menace to the lower middle valley. Floods due to rainstorms above this point apparently flatten out and become harmless, but the violent floods in these two tributaries, which often occur almost simultaneously, cause damage and disaster below.

"(7) The capacity of the river channel through the middle valley is probably about 12,000 second feet, and any flood greater than this amount will overflow the channel in many places. At the river bend above Alameda the river overflowed the concrete pavement and lacked only a few inches of overflowing the dike and coming down the valley into Albuquerque. This is the real danger point, some ten miles north of and sixty feet above the city, and adequate protection here is imperative.

"(8) The estimated maximum flow in the larger tributaries was about as follows:

Santa Fe Creek .....	6,500
Galisteo Creek .....	5,000
Santa Fe Creek .....	6,500
Galisteo Creek .....	5,000
Jemez River .....	5,000
Tonque Arroyo .....	1,450
Rio Puerco .....	38,000 (State Engr.)
Rio Salado .....	20,000 " "

"The rate of filling of the Elephant Butte Reservoir on September 25 indicated that there was an average inflow for twenty-four hours of 32,000 second feet, assuming that no water was drawn from the reservoir during the period. The maximum flow at San Marcial was probably considerably more."

In closing, I wish to state that the Middle Rio Grande Conservancy district has a plan for flood control, irrigation and drainage of the middle valley. If the district is ever freed from legal entanglements so that construction can be started, the middle valley will be comparatively free from the menace of floods, but until this protection work has been done there will be constant danger.

## EFFECT OF QUININE ON THE WIDAL REACTION

ELEANOR BULLOCK

Asst. Bacteriologist, N. M. State Public Health Laboratory, Albuquerque, N. M.

(Presented at New Mexico Public Health Association meeting, Albuquerque, June 3 and 4, 1930.)

The effect of quinine on the Widal reaction arose as a question in the southern part of the state and again in Albuquerque. It is a disappointment not to have Dr. Gerber, Health Officer at Las Cruces, at this meeting. He was practically sure that he had several cases of typhoid fever and we obtained consistent negative Widal and undulant fever reactions. In these particular cases the patient had been taking quinine for malaria. He wrote the laboratory asking if this could be a factor in diagnosis. We looked through all the available literature and could find nothing on this particular work.

Six rabbits were obtained to carry out this experiment. The serum of each rabbit was set up with *Bacillus typhosus* antigen to insure that natural agglutinins were absent. All were negative.

The antigen consisted of a suspension of *Bacillus typhosus* which was killed by the addition of a solution of five per cent phenol. The quinine was given the rabbits in doses of one and one-half grains per dose. This was figured on the basis of the weight compared to an average person. The one and one-half grains were equivalent to twenty-five grains per person for one day's dose.

The first two rabbits were given one and one-half grains of quinine every other day

for seven weeks. The quinine was given first in capsules but this proved extremely difficult, as the rabbits would play possum. They would hold the capsules in their mouths and then spit them out when they were set down. The last few weeks it was given in a solution. The druggist suspended the quinine in a licorice sirup and the rabbits did not seem to object to having this squirted down their throats. These two rabbits were bled and their serum was set up again with *Bacillus typhosus* antigen to see if there was any agglutination. Both were negative.

These same rabbits were now given increasing doses of the *Bacillus typhosus* antigen to develop an immune serum for typhoid. The inoculations were started with three-quarters cubic centimeter intraperitoneally. They were increased to one c.c. After five inoculations the remainder were given one c.c. intravenously. One of these rabbits died of pneumonia. Nine days after the last inoculation the remaining rabbit's serum was set up with the *Bacillus typhosus* antigen, and the agglutinations read 1-20,480, which is as high as could be expected, and showed in this rabbit quinine had no effect on the production of agglutinins for typhoid.

The second pair of rabbits were the reverse of the first pair. They received their typhoid inoculation before they received any quinine. After the course of *Bacillus typhosus* antigen had been completed they were bled, with the agglutination reading in both, 1-2,500. They were then given the quinine course. At the end of these doses their serum agglutinated complete at 1-1,280 with a partial agglutination of 1-2,560. This slight drop is to be expected in seven weeks' time. This showed that quinine had no effect on the agglutinins in the serum.

The last pair of rabbits were given the quinine and the inoculations of the antigen at the same time. One died, apparently from the effects of the typhoid antigen. The remaining rabbit's serum read an agglutination of 1-1,280, showing that the quinine given with the antigen had no effect on the production of the agglutinins.

It was unfortunate we lost one rabbit in each pair, but the readings do not seem to warrant the repetition of the experiment. A control rabbit in the first pair would have checked the high agglutination obtained. This may have been due to the fact that the rabbit was especially large and strong. The aid of quinine in the development of this agglutination is only a remote possibility. It is not unusual to have rabbits show a great variation in titres. This experiment would indicate that quinine has little, if any, effect on the production or non-pro-

duction of typhoid agglutinins in rabbits. It is possible that malaria as a disease will have some effect on the production of typhoid agglutinins. Since it is impractical to experiment with humans, and since only birds can be given a disease that resembles human malaria, that question would have to be settled by the use of birds, giving them this malaria-like disease and then injecting typhoid antigen. If any health officer in a malarial district wished to cooperate, he could send us the blood specimens from a given number of malaria patients having completed the typhoid inoculations and at the same time an equal number of specimens from normal individuals having completed the typhoid inoculations. This would give us some idea concerning the effect of malaria as a disease on the production of agglutinins.

### NEWS NOTES

DR. GEORGE M. BROCKWAY, of Phoenix, was injured in an automobile collision about November 15th, suffering head injuries the seriousness of which are still conjectural. His car was struck by another one about four a. m., while the doctor was returning from a call. X-ray examinations for possible injury to the right frontal area did not show visible fracture, but there have been symptoms of some cortical injury. Dr. Brockway is one of the prominent practitioners of Arizona, being chairman of the Staff of St. Joseph's Hospital and divisional surgeon for the Southern Pacific Railroad.

DR. JOHN HUFFMAN WHITE, of Rochester, Minn., who has recently completed his Fellowship with the Mayo Foundation, has become associated with the SOUTHWEST CLINIC, in Phoenix. Dr. White devoted the major portion of his Fellowship training to neurology, after laying a foundation in general medicine. He is a native of Oregon, having graduated from the University of Oregon, before becoming associated with the Mayo Clinic. He will fill a long felt need in Phoenix for a man who has specialized in neurology.

DR. JOHN W. FLINN, of Prescott, is demonstrating his versatility by accepting the appointment of chairman of the special committee appointed by Governor Phillips, to investigate and make efforts to relieve, the unemployment situation in Arizona. One of Dr. Flinn's first appointments was that of DR. R. D. KENNEDY, of Globe, as the divisional chairman for Gila County. It is a physician's privilege and duty to lend the aid of his interest and training to the solution of important problems of this sort. No better selection could have been made by Governor Phillips.

DR. A. C. CARLSON, of Jerome, was granted Fellowship in the American College of Surgeons, at their meeting in Philadelphia, in October.

DR. WM. H. WALSH, of Chicago, has been engaged to make the survey in Maricopa County, Arizona, as to the needs for a County Hospital. The Board of Supervisors have made an appropriation of \$1200.00 for this purpose, and the selection of Dr. Walsh was made by a committee from the Maricopa County Medical Society. No man in America is better qualified than Dr. Walsh for this purpose; he was recommended by the American Medical Association.



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## A CRITICAL APPRECIATION OF THE SOUTHWESTERN MEETING

The sixteenth annual Southwestern meeting is now history. Unless we have learned some things which will help us to plan even more successful meetings for future years, we have profited little from this occasion. Too often we fail to evaluate the faults, as well as the profitable features, of a meeting, and thereby fail to build constructively for the future. While the events of this sixteenth session are fresh in our minds, we will record some things which struck us forcibly.

### SCIENTIFIC PROGRAM

This is our second attempt to hold the type of meeting known as a "Clinical Conference." The memorable session of 1927, when Dr. Waite was president and Dr. Hugh Crouse the chairman of the Program Committee, introduced this sort of meeting into the southwest. The following year the same plan was tried at Albuquerque, but without great success, probably because the president (Dr. Crouse) was ill and there was no responsible head for the Program Committee. At the Phoenix meeting of 1929, attempt was made to return to the old style of combined clinical demonstration and scientific papers; it was fairly successful. This year, at the request of the El Paso County Medical Society, the president of the Association (Dr. Palmer) acting as chairman of the Program Committee, endeavored to reproduce the very excellent meeting of 1927. He secured the participation of an unusually fine group of teachers and lecturers, and the program was admittedly the best ever offered a southwestern gathering. Men who attended both of these meetings (1927 and 1930) declare that the recent program was the best they have heard before the Southwestern Association. In spite of this, members of the Program

Committee, along with some other members of the Association, are not satisfied to discard the clinical demonstration feature of our program. There are methods of preserving these and coordinating them with a "Clinical Conference," and it is hoped the Program Committee for the next meeting, and future meetings, will work out these methods and utilize them.

The only criticism of the program speakers which we wish to mention, and this applies to most medical meetings we attend, is their fondness for talking their subjects, instead of writing them out and reading the material. Several of the addresses could have been presented in twenty or twenty-five minutes, had they been condensed into well prepared, systematically arranged papers, whereas they actually consumed from an hour to an hour and a half in presentation. We cannot recall any lecture given at this meeting which could not profitably have been condensed into forty-five minutes except the motion pictures. Many of the talks and papers were within that time limit and those will stand out in favorable contrast to the longer talks, in the minds of the hearers. Even the speakers who had written papers, with one or two exceptions did not read their manuscripts, but gave talks instead. Most of the speakers unconsciously drifted into the manner of teachers talking to classes of undergraduates, with the result that instead of concentrating their material, they diluted it and consumed much more time than was necessary. There were two or three notable exceptions on our program, of speakers who had the rare faculty of concentrating their material as they talked. Lecturers who lack this faculty should read from manuscript and they will find a much more appreciative audience.

A very creditable scientific exhibit, though small, was a pleasing feature of this

Conference. The x-ray films, native pollen-bearing plants, and pathological specimens, were very attractive. It gave us a small sample of what is possible in that line at our annual gatherings. May they grow until a room as large as the Hussmann ball-room is required to accommodate our scientific exhibit:

#### SOCIAL ENTERTAINMENT

No praise can be too high for the fine hospitality tendered the visiting ladies by the Ladies' Entertainment Committee. It was well planned, highly enjoyable, done entirely in El Paso, and left nothing except pleasant memories.

Just what came over the host-guest informal dinner on Thursday evening remains a mystery. It was planned by the Program Committee to be the high spot of the convention, where members and visiting doctors were to be the guests of the El Paso County Medical Society. Neither hosts nor guests were present in any numbers and a regular course dinner was served for the usual quid pro quo from members, guests and visitors. The meeting following was the most poorly attended session of the convention. This was unfortunate as two of the most important addresses of the convention were delivered; the presidential address contained several recommendations which came up later for discussion in the business meeting, and were not entirely understood; Dr. Martin, president of the Dallas Southern Clinical Conference, an honor guest of our Association, also gave his address,—one of the best of the convention.

In order to permit the members and visitors one entire evening for conviviality, we suggest for next year's program that we start the Conference on Wednesday afternoon with some of the best features of the program; that we hold the principal public meeting on Wednesday evening; that the host-guest smoker on Thursday evening be given over entirely to jollity without any scientific program; that the annual dinner-dance be held Friday evening, and the Conference close at noon on Saturday, as was done this year.

The attempt to hold the annual dinner-dance in Juarez has never been successful. Three years ago the Toltec Club was used and this year the Central Cafe, and both times the functions have been disappointing. The Central Cafe is crowded and unattractive, without adequate accommodations for a dinner-dance. Let the annual smoker be held in Juarez, if desired, but we believe we speak for the majority of the members of

the Association when we say the annual dinner-dance should be in the most beautiful and attractive setting obtainable,—and there are many such to be found in El Paso. In fact, the best improvement we can think of for El Paso, as a meeting place for our Association, would be to move the border one hundred miles south. Since this cannot be done, we must adjust the program as far as is wise to the appetites of the minority of our members, but not so far as to jeopardize the serious business of the convention, for which the majority of us come.

#### LOCAL ARRANGEMENTS

The Hotel Hussman is a good convention hotel, but is not perfect. A hotel catering to conventions should have a suitable meeting room, with permanent screen for slides and motion pictures. An irritating feature of the meeting just held was the noise. Whatever the piece of machinery is which starts up at frequent intervals in close proximity to the ball room, it is most annoying. The doors entering the room should be provided with closing devices which will close them automatically and noiselessly. If smoking is to be permitted, chairs with ash trays clamped on them would be very desirable, thus avoiding the noise of people kicking the saucers about on the floor.

The details of registration, etc., were well taken care of. Some of the invited guests were allowed to pay registration fees and to buy tickets for the dinner-dance,—and this was not intended.

The provisions for showing illustrations have never been better, with lanterns always ready and a competent operator constantly in attendance. Whoever was responsible for this did his job well.

The newspaper publicity was not up to our usual standard. At former meetings, the El Paso papers have shown willingness to publish whatever the convention desires. At this meeting the reporters apparently selected for themselves whatever they thought would be interesting, and no one can blame the papers for any garbled accounts which appeared.

A year ago, following the Arizona State Medical Association meeting, the editor decided to criticize freely and frankly any of the meetings he attends. This is done in all kindness and with the hope that the deadly monotony into which we threaten to drift, in our annual gatherings, may be avoided and that we may constantly build better and better conventions.



## DR. WHITMORE RETURNS HOME

Two newspaper items of the past few weeks with reference to Dr. Whitmore have aroused in the editor, who feels deeply the useless injustice done to this patriarch of the medical profession, a desire to express again what we believe is the mind of Dr. Whitmore's confreres in Arizona. One item was the cold-blooded statement that the California Board of Medical Examiners has revoked Dr. Whitmore's license to practice in that state, and that his "last California address was Los Angeles." This concluding statement is an illuminating picture of the relentless, causeless and ill-considered action of this Board. Not even well enough informed on the matter to know that Dr. Whitmore has been the "dean of the medical profession" in Arizona for thirty years, one of the leading citizens of the state, and that he had been pardoned by the President, this Board must needs go out of its way to take this action. We do not believe that this Board, nor any other Board of Examiners, is bound by the action of a court of justice,—which is not always just,—with regard to a licensed physician. They have the power to decide whether or not the license of the physician shall be revoked. The Board of Medical Examiners for Arizona have taken no such action and they have the same facts before them as the California Board had. Neither they nor the medical profession of Arizona, nor any well informed citizens of the state, have ever regarded Dr. Whitmore consciously guilty of a criminal act.

The other newspaper item stimulates happier thoughts. It is the editorial in the Tucson Daily Citizen of October 26, 1930, and it speaks the mind of Tucson. We can do no better than quote from it:

As to the conviction itself, we may discuss it as a thing accomplished and irrevocable, after saying that few if any of us believe that Dr. Whitmore was consciously criminal in any of the acts on which the charge was based. Despite this, he submitted himself to authority in good faith and an unembittered spirit, and in that mood he has returned to the town which he loves.

For the hurts he has balméd, for the lives he has safely brought into the world, for the diseases for which he has vicariously wrestled and overcome, for the deaths which he has made easier, our little jurisdiction of society owes to Dr. Whitmore something, and that something is a complete subscription to the pardon and our initials on the document which marks his debt "Paid in full."

He has been a resident of Tucson for 38 years; he has been one of the most consistent friends which our university has had. He is a former chancellor of the institution; his only son is a graduate of it. Against this there is nothing to mark up but an unconscious, profitless violation of the law, and we think Tucson is big enough to wipe that out and remember it no more forever,

giving this patriarchal healer a whole-hearted and unreserved welcome home. In doing so we may assure ourselves that if general human conduct averaged as high as that of Dr. Whitmore this would be infinitely a better world and a need for fewer laws and sleuths to detect their violations.

## MEDICAL INSTITUTIONS IN ARIZONA

An institution better known to the country at large than it is to its nearest neighbors, is The Desert Sanatorium and Institute of Research, located at Tucson, Ariz. It has undergone an amazing development since Dr. Allen K. Krause became its Director, and is rapidly laying the foundation for a place of importance among the worthy institutions of the country. It is being developed for the "diagnosis and treatment of chronic arthritis, sinusitis, nontuberculous pulmonary and upper respiratory complaints, arterial hypertension, cardiorenal insufficiency, etc." Dr. Alan C. Sutton is the Physician in Chief, and Associate Directors are Dr. Charles W. Mills, Dr. Max Pinner and Dr. W. Paul Holbrook. On the resident staff are Drs. Benson Bloom, Vivian Tappan, C. L. Robbins, C. E. Bensema, Aaron E. Margulis, Edward M. Hayden, W. C. Davis, Wm. D. Carrell. Members of the profession of the southwest, when in Tucson, will find a visit to this sanatorium very interesting and instructive.

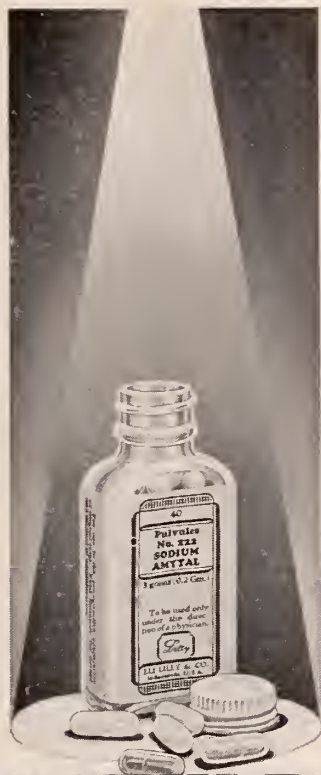
The Grunow Memorial Clinic building, in Phoenix, is nearing completion. This structure, being built by Mr. Grunow at a cost of about \$125,000 for the first unit, is intended to house a group of physicians and a research laboratory. The full details of its plan of organization have not been announced. Dr. W. O. Sweek, of Phoenix, has been mainly instrumental in the development of this project, and it was through him that the endowment was secured from Mr. Grunow.

The addition to the Good Samaritan Hospital in Phoenix, which will enlarge its capacity by about eighty beds, is nearing completion. An interesting feature of this new structure will be the excellent auditorium; this is intended primarily for teaching purposes in the School of Nursing, but will be available for staff meetings and general medical meetings; it will seat about 250 people, is provided with a stage, picture screen and other facilities for teaching purposes. The removal of the power plant into a separate structure is a part of the plan, which will be a very material improvement. A new clinical laboratory is being provided also.

Work is being carried forward on the new Southern Pacific Hospital and Sanatorium in Tucson. This will be one of the important hospitals of Arizona, and will provide greatly needed facilities for the industrial cases of the Southern Pacific Railroad, which cases now are sent to Los Angeles or San Francisco.

The new medical building in Phoenix, to be constructed by the Valley Bank, will be a notable addition to the city's sky line and a much needed office building for the profession of Phoenix. Ground is now being cleared and construction will start before the first of the year. The building has been financed and only architectural details and fabrication of the structural steel now delay the actual construction. It will be the first Class A building in the city, the superstructure being steel. A majority of the physicians of the city have already signed applications for space in the building, which is to be at least ten stories in height.

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## PROCEEDINGS OF THE SIXTEENTH ANNUAL MEETING OF THE MEDICAL AND SURGICAL ASSOCIATION OF THE SOUTHWEST

(Continued from page 545)

Heart Disease." This was a very able presentation, freely illustrated by electrocardiographic studies, by lantern slides and charts. Critical internists stated that they had never heard a better presentation of this subject.

Owing to the proximity of the luncheon, adjournment was taken, and the Clinical Luncheon served. Following this, Dr. Allen Krause, of Tucson, gave his address on "Chronic Pulmonary Infection." The attendance was large and the attention maintained throughout the period, this being one of the most practical talks of the whole program.

In the afternoon, the first address was by Dr. Roy Thomas, of Los Angeles, whose subject was "The Management of Lobar Pneumonia." Based on a very large experience in the Los Angeles General Hospital, the conclusions arrived at are very conservative, but of immense value for the practitioner. Digitalis has been found to be of no benefit, perhaps harmful. Enemas and laxatives should not be used. Caffeine and pituitrin should be used when stimulation is needed, and oxygen for cyanosis. Serum may be used in Types I and II, though of doubtful value.

Dr. M. Edward Davis, of Chicago, then gave

his address on "Breech Presentation," which was illustrated by a four reel film, which has just been completed and which was shown here for the first time. This was a very interesting and practical demonstration on a phase of obstetrics regarding which there is considerable misunderstanding and which is often wrongly handled.

Dr. Willard Bartlett, of St. Louis, gave the next address on "A Modern Concept of the Indications for Thyroidectomy." This is the result of some new studies on a series of 100 patients, conducted by Dr. Bartlett, Junior, and presented some rather startling facts. The necessity for prolonged observation, and for extreme caution in operating on certain types of patients, was brought out very forcibly by charts and by the speaker's conclusions.

Dr. LeRoy S. Peters, of Albuquerque, N.M., gave the next address, on "Cauterization of Adhesions—Jacobaeus-Unverricht Method." This speaker gave the indications and contra-indications for this procedure, which has been done by him on forty patients, out of 149 in whom pneumothorax was done or attempted during the last two years.

The Annual Dinner was held at the Central Cafe, in Juarez, on Friday evening. About 225 were present, crowding the capacity of this cafe to the limit.

On Saturday morning, the first paper was by Dr. Frank S. Dolley of Los Angeles, who gave a "Resume of the Present Day Surgical Treatment of Diseases of the Chest." This was an admirable summary, covering the subjects of pneumothorax,

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Dr. William M. Spitzer, of Denver, gave the second address, using the subject, "Pyelectasis (Hydronephrosis) and Ureterectasis: Causes and Treatment." This was freely illustrated by lantern slides. Infection was given as the chief, if not the only, cause of pyelectasis. Mobile kidney has no relation to the development of this lesion.

The last address of this meeting was given by Dr. Charles T. Sturgeon, of Los Angeles, on "Sodium Amytal for the Preadesthetic Preparation of Surgical Cases." This intensely interesting development in surgery was ably presented, from an experience based on 200 cases, 125 from the surgical service of the Los Angeles General Hospital, and 75 private patients. It was well illustrated by a movie film made by the speaker, showing the various stages of amytal administration.

The meeting then adjourned to the Business Session, which was held during the luncheon, Dr. E. Payne Palmer presiding.

Secretary presented a verbal report to the effect that there are 300 members on the roll, of whom 52 are delinquent in dues one or more years.

The funds of the Association are all used each year in defraying the expenses of the secretary's office, and are supplemented by a portion of the amount which goes to Southwestern Medicine (\$2.00 per member). In this reciprocal arrangement, the official journal owes a debt to the Association for the \$2.00 per member which the journal receives, and the Association in turn, is always in debt to the journal, on account of the use of the journal's funds in helping support the Association. There is no reasonable way to segregate these two funds, under the present conditions, without cramping the work of one enterprise or the other.

The report of the special committee appointed to consider the recommendations of the president, was called for. This report consisted of several numbered portions which were taken up in order.

Recommendation No. 1 was to the effect that the By-Laws be amended, and that the annual dues be set at \$5.00. Motion was made by Dr. Gallagher, seconded by Dr. Brown that the dues remain at \$3.00. After discussion by Drs. Greer, Rawlings, Ramey, Ploussard, Gallagher, Brown, Watkins and the chair, motion was put and lost by vote of 21 to 8.

Motion was made by Dr. Swope, seconded by Dr. Ramey that the dues be increased to \$5.00 per year. Motion carried by 25 ayes to 6 noes.

The second recommendation was to the effect that the Board of Trustees be relieved as members

of the Program Committee, and that the president of the Association appoint a Program Committee each year, whose duty it will be to arrange for the annual scientific program. Motion was made, seconded and carried, that this recommendation be adopted.

The third recommendation had reference to the manner of receiving new members, through a Membership Committee, after their nomination by two members of the Association. Motion was made that this be adopted; seconded. After some discussion over the advisability of accepting as members, doctors who are not members of county or state organizations, motion on adoption was put and lost.

Dr. Swope then made motion that the recommendations of the reference committee as to a



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Membership Committee be adopted, where they do not conflict with Article III of the Constitution, outlining the qualifications for membership. Motion was seconded and carried.

Recommendation number four empowered the president to appoint such committees as he might desire for the proper conduct of the Association's business and the carrying out of the purposes of its organization. Motion made that this be adopted, seconded and carried.

The recommendation of the president in his address on the matter of having a president-elect, were presented by the committee without recommendation.

At this point, Dr. Gallagher made motion that the Order of Business be changed so that the place of next meeting be selected before the president is elected. After some discussion, this motion was carried.

No motion being made on the matter of a president-elect, the report of the Committee on Resolutions and Necropsy was called for and presented by Dr. J. M. Greer, chairman, as follows:

"Whereas the Sixteenth Annual Meeting of the Medical and Surgical Association of the Southwest has enjoyed a very pleasant and profitable three-day conference on November 6, 7 and 8, 1930 in El Paso, Texas, and whereas our visiting ladies report that they have been most graciously entertained, therefore be it resolved that we extend our sincere appreciation to Dr. Paul Gallagher and local committee and the other officers and members of the El Paso County Medical Society for their entire efforts in our behalf. Also that we extend to Mrs. Hugh Shannon and other members of the Medical Auxiliary our sincere appreciation for so graciously entertaining our visiting ladies and extending to them so many courtesies."

"Whereas, this program has brought to this conference some of the best medical and surgical talent of our entire United States and whereas the nature of the program has been varied and has covered, to a large degree the field of medicine and surgery, and whereas we have heard many expressions of approval of this type of program from many members of this association and whereas this program has required great effort and constant vigilance on the part of our President and his assistants,

Therefore, be it resolved that a vote of thanks and appreciation be extended to our President, Dr. E. Payne Palmer, and those who assisted him.

"Whereas, the speakers who have come to us from various sections of the country and who have left their homes and work at no small sacrifice to themselves, and who have brought to us the fruit and results of their labor, representing many hours of work; and whereas, the presentation of this work has been so clear and interesting that they have proved to us that they have given us the best they have;

Therefore, be it resolved that we express to them our sincere appreciation for the presentation of this splendid work, and further be it resolved that our secretary be instructed to write each and everyone a letter of compliment and gratitude."

#### IN MEMORIAM

Whereas, death has stricken from our membership roster the name of Dr. Robert C. Dryden of Pima, Arizona, and whereas this has taken from us one of our charter members and professional brothers and has taken from the community of Graham County of Arizona a doctor, a friend and a respected citizen, and each of these has suffered a loss thereby;

Therefore, be it resolved that we pay tribute to

his memory and that our secretary be instructed to send a note of sympathy and condolence to his relatives, together with a copy of this resolution.

The report of the Committee on Place of Meeting was called for. Dr. Swackhamer, for the Committee, stated that they had received no invitations, but from some general talk going around it would seem that Phoenix would be the choice of the Committee. Motion was made that the 1931 meeting be held in Phoenix. Seconded and carried.

Election of officers being the next order of business, nominations for president were called for.

Dr. W. R. Jamieson of El Paso, was placed in nomination for the office of president. Motion was made and seconded that the nominations close. After some confusion and after Dr. F. B. Evans of Alamogordo, N.M. had been nominated, vote on the motion made was called for. When the motion was put, it carried without dissenting vote. Motion was then made that the secretary cast the ballot of the Association for Dr. Jamieson, and this carried, Dr. Jamieson being declared elected as president for the ensuing year.

For the office of first vice president, Dr. Frank T. Hogeland of Cananea, Sonora, was nominated, and elected *vive voce*.

For the office of second vice president, Dr. F. B. Evans of Alamogordo, N.M. was nominated, and also elected *viva voce*.

For the office of secretary-treasurer, Dr. W. W. Watkins, of Phoenix, was nominated and elected *viva voce*.

There being no further business, meeting adjourned *sine die*.

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# REPORT OF RECORDS COMMITTEE OF GOOD SAMARITAN HOSPITAL

((Deaths during January, 1930))

There were fifteen deaths, with three autopsies, safely over the minimum desideratum of fifteen per cent.

Case 7595, married woman, entered Jan. 3 and died on the 9th. Lobar pneumonia, with abortion of 3 mos. old fetus. Fact of pregnancy apparently was not known until abortion took place. Record somewhat better than average.

Case 7618, married man, age 58, entered the 6th and died on the 10th, diagnoses of diabetes mellitus, lobar pneumonia, acute pancreatitis and left ventricular heart block, hypertension bronchial asthma. Quite a fancy assortment of diagnoses. Patient came to hospital for severe pain in right lower chest. There are no physical findings of lobar pneumonia recorded. We do not think the essential cause of death was well worked out in this case.

Case 7793, woman, age 45, entered Jan. 27th and died the same day. Diagnosis of uremia and possibly pneumococcus meningitis.

Case 7745, man, age 25, entered Jan. 25, with severe burns from which he died in a few hours.

Case 7584, married man, age 48, entered Jan. 1st, with severe head injury sustained in auto accident. No. 1 in the Arizona Republican series.

Case 7737, man, age 42, entered Jan. 20, and died the 24th, spontaneous pneumothorax and empyema. Rib was resected and pus drained.

Case 7784, 17 mos. old baby with cerebrospinal meningitis, dying three hours after entering hospital. Was taken acutely ill 40 hours before.

The three autopsied cases were as follows:

Case 7610, recently married woman, age 32, entered hospital Jan. 5, for operation for uterine fibroid and salpingitis. Physical examination records are good, showing heart slightly dilated. Under spinocaine anesthesia, hysterectomy was done. After operation was over and patient was being transferred to her room, she went into convulsions. Respirations ceased before the heart stopped, and in spite of heroic treatment, she never revived. Autopsy did not disclose the cause of death, there being no lesions of heart valves, no embolism in lungs, no visible lesion in brain or medulla; coronary arteries were patent and heart muscle normal.

Case 7773, man, age 57, entered Jan. 24 for an abdominal lesion, with cramping pain in upper abdomen with nausea and vomiting. There was tentative diagnosis of partial intestinal obstruction. Barium meal examination was begun, but patient expired before this was finished. Autopsy on abdomen only. This showed bowel obstruction through a Meckel's diverticulum, producing scar like constriction and gangrene of proximal bowel.

The third autopsy case is the first in a group of six deaths occurring in old people. Cabot discussions makes the statement that when an old person (around 70 years) dies, in ninety per cent one of four things will be the cause of death:—

- (1) Vascular disease of heart, brain or kidney.
- (2) Neoplasm.
- (3) In the male, conditions arising from prostate.
- (4) Terminal infection, of which broncho-pneumonia is the commonest.

It will be interesting to see whether these six deaths conform to this grouping.

Case 7682, married man, above 60 years old. Entered Jan. 13, with complaint of dyspnea and pain in chest for three weeks. A year ago had diagnosis of cancer of prostate and radium treatment given. Death on the 15th. Chief findings at autopsy

were bronchiectasis, recent plastic pleuritis over lower right lung, atheromatous aorta, lung metastases, epicardial thickening with tortuous and sclerotic coronary arteries. Cancer of prostate with metastases to mesenteric and retroperitoneal lymph nodes. This man falls in at least three of the groups of Cabot.

Case 7597, man 69 years old, entered Jan. 3, and died on the 8th. Diagnosis of mitral insufficiency and edema of lungs. There are no physical findings to support this diagnosis which the physician records and signs with the utmost sang froid; in fact there are no findings with reference to the heart recorded at all. The working diagnosis (after physical examination, is said to be myocardial insufficiency and chronic nephritis. The doctor is either holding out on us with regard to what he knows about this patient, or else we will have to record this as an arteriosclerosis with cardiac failure,— and put it in class 1, of Cabot.

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Case 7609, man aged 77, entered Jan. 5, and died on the 12th, with diagnosis of bronchitis, asthma, cystitis and senescence. In the history his cystitis is shown to be due to prostatic disease. There was probably some bronchopneumonia,—so that he falls in three of Cabot's classes.

Case 7608, man, age 75, entered Jan. 5th and died the next day, with bronchopneumonia. According to the doctor, this old man tried to "step out" on New Year's day, caught cold and paid the penalty of being too old to act young. Class 4 of Cabot.

Case 7467, man, aged over 60, entered Dec. 20, and died Jan. 9, with bowel obstruction, following first stage of what was intended to be a two-stage removal of the prostate. Class 3 of Cabot.

Case 7731, man, aged 77, entered Jan. 19, with diagnosis of autointoxication, dying next day. Patient has history of being irrational at times, and was in delirium when brought to hospital. Physical examination fairly good, but showed nothing definite, except an enlarged and indurated prostate. White count was 25,000, indicating some terminal infection. Can almost certainly place this case in the first group of vascular diseases, probably involving brain and kidneys.

### BOOK REVIEW

GROWING UP, by Karl de Schweinitz; New York; The MacMillan Company; 1930.

Growing Up is a simply, tersely, boldly told story of the physiological problems of mating, copulation, conception, intrauterine growth, labor, etc.

In places the narrative,—perhaps unavoidably—is a bit crude. For example, on page 49 I quote: "The rooster flies upon the back of the hen. While he is there an opening under his tail feathers touches an opening under the tail feathers of the hen." And again on page 50: "This little pipe or tube is called the penis. When the male animal sends the sperm to the female he seems to be trying to climb on her back. As he does this the penis fits into the opening in her body.....The testicles are held in a little bag outside the body and under the penis. It is also through the penis the urine or waste water passes."

The language is apparently selected for children about seven to eight years of age. The facts for the most part, are for older children and young adults.

I am not sure that I see any highly useful field for the book, except to instruct parents as to how to present these problems to their inquiring children. Perhaps the average parent, or the child ready for the knowledge, is of the mentality that the book would not be an insult to his intellect.

The illustrations from comparative zoology and the pictures are excellent and the entire product is a splendid example of the printer's art. O.H.B.

MEDICAL CLINICS OF NORTH AMERICA. University of California number; Dr. Lewellys F. Barker. July, 1930, Volume 14, No. 1. W. B. Saunders Company, Philadelphia and London. The clinics presented in this volume cover a wide range of conditions and are presented in an extremely interesting manner by Dr. Barker. "Dangers of neglect of accuracy in physical examinations" is emphasized and throughout the volume we find application of the latest in laboratory diagnostic methods.

H. P. M.

THE TREATMENT OF DISEASES IN DETAIL By Noxon Toomey, M.D., Late Instructor in

Dermatology, St. Louis University. Sometime Editor of the Urologic and Cutaneous Review, St. Louis, Mo. 512 pages, large octavo, Lister Medical Press, St. Louis, publishers. Price \$7.50.

This Volume 3, of the Principles and Practice of Dermatology, by this author, the other two volumes being devoted to Pathology (Vol. 1) and Diagnosis (Vol. 2.)

This book purports to include an adequate description of the treatment of all known skin diseases. The methods described are those used by the author in his private and dispensary practice of the past fifteen years. This volume is a very valuable one for reference, although obviously one cannot very well use it for this purpose unless he is able to make a diagnosis of his skin lesion. This book was received for review several months ago and has been purposely held until it could be read critically. There are many books on skin diseases in our library and it is certain that this one will occupy a chief place among them and be consulted as frequently as any.

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Volume XIV

DECEMBER, 1930

No. 12

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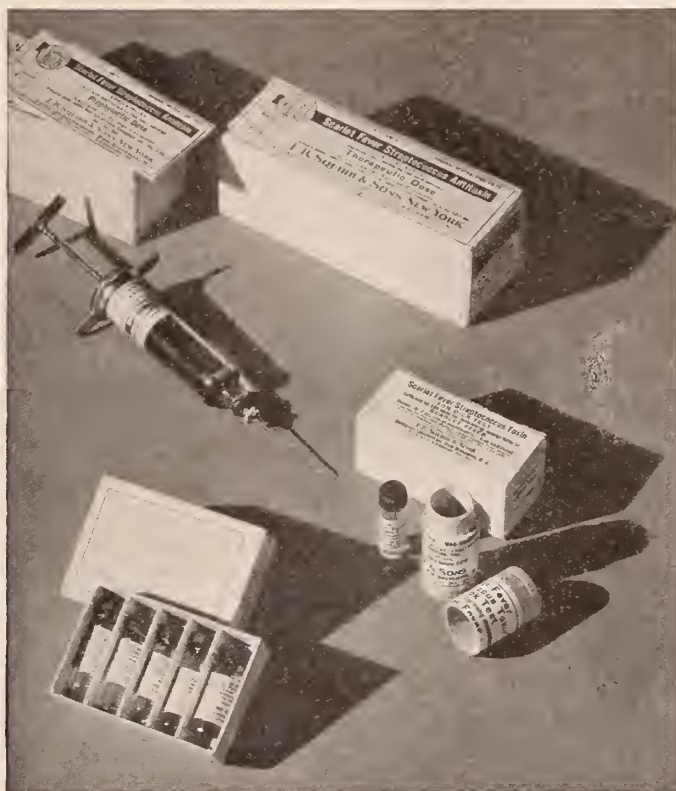
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¼ cup cold water .....	..	..	..	..	..
1¼ cups boiling water .....	..	..	..	..	..
2 tablespoons lemon juice ..	20	..	..	2	..
½ teaspoon salt .....	..	..	..	..	..
1½ cups cooked spinach chopped .....	300	6	..	7	..
2 hard cooked eggs .....	100	13	10.5	..	..
<b>Total</b>	<b>28</b>	<b>10.5</b>	<b>9</b>	<b>242.5</b>	
<b>One serving</b>	<b>5</b>	<b>2</b>	<b>1.5</b>	<b>40</b>	

Soak gelatine in cold water and dissolve in boiling water. Add lemon juice, salt, strain and chill. When nearly set, stir in chopped spinach, mold and chill until firm. Serve on lettuce hearts or tender chicory leaves and garnish with hard cooked egg, cut lengthwise in sixths and sprinkled with paprika. Serve with mayonnaise.

## JELLIED CHICKEN IN CREAM

(Six Servings)

Gms. Prot. Fat Carb. Cal.

1 tablespoon Knox Gelatine	7	6	..	..	..
¼ cup cold chicken broth or water .....	..	..	..	..	..
1¼ cups boiling chicken broth, fat free .....	..	..	..	..	..
½ teaspoon salt .....	..	..	..	..	..
Pinch pepper .....	..	..	..	..	..
1 cup cooked chicken, cubed .....	125	24	20	..	..
¼ cup cream, whipped .....	55	1	22	1.5	..
<b>Total</b>	<b>31</b>	<b>44</b>	<b>1.5</b>	<b>526</b>	
<b>One serving</b>	<b>5</b>	<b>7</b>	<b>..</b>	<b>88</b>	

Soak gelatine in cold liquid for five minutes and dissolve in hot broth. Season with salt and pepper and chill until nearly set. Fold in chicken and whipped cream. Turn into molds and chill until firm. Serve on lettuce or garnished with parsley and strip of pimento.

## TOMATO JELLY

(Six Servings)

Gms. Prot. Fat Carb. Cal.

1¼ cups hot water .....	..	..	..	..	..
½ teaspoon salt .....	..	..	..	..	..
½ teaspoon whole mixed spices .....	..	..	..	..	..
1½ tablespoons Knox Sparkling Gelatine .....	10	9	..	..	..
5 tablespoons cold water ..	..	..	..	..	..
1¼ cups tomatoes strained	250	3	.5	10	..
2 tablespoons vinegar .....	..	..	..	..	..
<b>Total</b>	<b>12</b>	<b>.5</b>	<b>10</b>	<b>92.5</b>	
<b>One serving</b>	<b>2</b>	<b>..</b>	<b>2</b>	<b>15</b>	

Bring to boil, hot water, salt and spices. Soak gelatine in cold water for five minutes and dissolve in hot liquid. Strain into tomatoes and add vinegar. Stir well and pour into molds. Chill until set. Serve plain, or on lettuce, with or without salad dressing.

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## TUMORS OF THE FEMALE BREAST

W. T. H. BAKER, M. D.  
Pueblo Clinic, Pueblo, Colo.

(Read before the New Mexico Medical Society, at its forty-eighth Annual Meeting, Raton, N. M., June 4-6, 1930).

What is a tumor? White's descriptive definition<sup>1</sup>: A tumor proper is a mass of cells, tissues, or organs, resembling those normally present but arranged atypically. It grows at the expense of the organism without at the same time subserving any useful function.

Tumors of the female breast have been known for thousands of years. Cancers are mentioned in the Papyrus Ebers (1500 B.C.). Celsus, thirty years after the birth of Christ, described several varieties of cancer and he excised breast cancers, advising against the removal of the pectoralis major. pectoralis major.

Marcus Aurelius Severnus (1580-1650) separated cancer from benign tumors of the breast and extirpated the axillary nodes. Until the middle of the nineteenth century it was the accepted belief that all tumors of the breast were of malignant nature. When Cruveilhier, in that century, brought out the fact that many tumors of the female breast were benign in character, his statements were seriously challenged by the members of the French Academy of Medicine.

As yet, no one has ever known why tumors of any sort start in the human body or why they start in some particular spot. We accept as true the dictum that new growths never start in sound tissues. We know that chronic irritations are factors. This, however, does not explain why, in certain cases in which the source of irritation is very slight, new growths develop; while in others cases where the irritation is much more, they do not. The susceptibility of the individual here

enters as a most prominent factor. In no other way may we account for the fact that 90 per cent of the human race at present do not have cancer, and that 10 per cent die from it. The studies of many investigators point to local and general susceptibility as, perhaps, the controlling factor in the genesis of malignant conditions.

"The breast is so open to observation that it is the organ from which the knowledge of the natural history of cancer was primarily derived." The mammary gland was called, by Rindfleisch, the "nurse of pathological histology."

Tumors of the breast are many and varied. We are chiefly concerned with but one classification, benign and malignant. The benign tumors are numerous and so varied as regards names that it would be but a waste of time to attempt to enumerate. Recently attempts have been made to secure a more uniform nomenclature. No one has been more active in this than McFarland. In a series of 289 cases of supposed benign fibro-epithelial tumors of the female breast he found 105 of them described under no less than 33 names. Investigations made by unbiased searchers showed them all to be periductal fibromata. One hundred and forty-seven described in much the same manner were simply mammary gland tissue, either normal or undergoing some process of involution. He concluded that all benign tumors should be classed as some form of periductal fibromata. Benign tumors of the breast give us but little concern after they are proved to be benign. The treatment of such can be given in a sentence. "Remove the segment of breast in which they are contained, but do not try to enucleate."

All suspected breast tissues should be subjected to a most rigorous examination by a competent pathologist. No one, in my opinion, has the right to pass upon the benign-



nancy of any abnormal tissue from an external examination. I know in making this statement I am to be challenged. No less an authority than Bloodgood has this to say (I quote most freely from his recent paper on "Chronic Cystic Mastitis":) "The largest number of women who seek advice the moment they are warned by anything unusual in their breasts, come because of a pain, a lump, or enlargement. When carefully studied we find the largest findings are lumpy breasts which are usually due to a chronic cystic mastitis. This is the most common lesion in breast cases in which the symptoms are of one month's duration or less. In probably 70 per cent of these cases any operation can be decided against by palpation alone. In the 30 per cent in which the breast must be explored, in one half, or more, the malignancy of the lesion can be recognized by a combination of gross inspection and immediate section."

Greenough, discussing the above (and again I quote), says: "The doctrine in surgery for a long time has been that a tumor in the breast of a woman of cancerous age should be regarded as malignant until it is proved to be something else; and no matter how skillful we may think ourselves in diagnosis from an external examination, we must learn we are but human and fallible and we may be mistaken in our diagnosis."

Most cases of persistent chronic mastitis finally terminate in cancer and we are not justified in continuing the do-nothing policy in such cases. Keynes says, "Carcinoma of the breast is not necessarily preceded by chronic mastitis, but both conditions or either separately may result from one cause, namely, prolonged exposure to a chemical irritant such as may be present in the stagnating secretion in the breast."

Thus differences of opinion have existed and still will exist until the true etiology of growths is found.

The profession has a tremendous responsibility. Each one of us has to decide, not once but many times, the fate of the woman who comes to us seeking relief. The propaganda so universally adopted during the past few years has created in the mind of every intelligent female, the fear of cancer.

As previously stated, the breast is an organ open to inspection; and whether pain, a discharge of blood, or a lump, is discovered, the woman necessarily feels she must do one of two things. She either, from fear or ignorance, conceals her findings until her suffering is such that she can no longer do so, or she consults some one about her condition. For those who conceal, we can do nothing; for those who consult us, we can do a

great deal. If every physician would endeavor to impress upon his female patients the very great importance of semi-annual, or even annual physical examinations, more good would be done, if accomplished, than by all the publicity in papers, public talks, and so forth. The value of the personal appeal of the family physician cannot be overestimated.

It is the speaker's opinion that we have carried "cancerphobia" too far. We have dwelt so much on the dire results to come from a lump in the breast, that many, many women put off coming to us until it is too late because they are afraid that a lump in the breast always means cancer. Our older statistics give 80 per cent of all breast tumors as being malignant. Our more recent ones show that more innocent tumors are being found than ever before. We can no longer say that the chances of a breast tumor being malignant are four to one. This fact should be stressed. We may honestly state to our patients that, if lumps are benign, there is no cause for worry if they are removed. If the tumor mass is removed and found to be malignant, the earlier a radical operation is performed the greater is the chance for cure.

During the past year, at the Pueblo Clinic we have used, in rapid diagnosis of breast tumors during operation, the method developed by Dr. Benjamin T. Terry. The growth is inspected grossly, and an appropriate portion selected and removed. This piece of tissue, about 1 by 1 by 0.5 cm. in size, is fastened by pins to a cork board, moistened with water, and cut with an ordinary razor into slices 1 mm. or less in thickness. A section is placed in a dish of distilled water and floated onto a glass slide. With the tissue surrounded by water, leaving only the upper surface free, a special neutralized polychrome methylene blue stain is applied to the upper surface with a camel's-hair brush. After a few seconds the stain is washed off with distilled water; a coverglass is applied, and the section is examined with either the 2/3 or 1/6 inch objective. The surface layer of cells is stained beautifully, while the rest of the section is translucent, and permits free passage of the light. This method is more rapid than frozen sectioning, and the tissue is more free from artefacts than when it has been frozen and thinner sections cut. The sections are not permanent, but after the emergency diagnosis has been made there is ample time for the preparation of slides from the fixed specimen.

Kocher long ago said; "The determining factor for the operative prognosis is the time and not the manner of operation."

## THE MODE OF EXAMINATION

Bear in mind that tumors are likely to occur in either breast. They are more frequent in single than in married women and more common in the white than in the black race. The age of the patient must be considered. Ordinarily, after 35 is supposed to be the cancer age. However, in a series of 2083 cases reported from the Mayo Clinic,<sup>6</sup> 51 per cent of the cases were between the ages of 17 and 50, and 49 per cent between 50 and 84. This age incidence suggests that all tumors of the breast occurring after puberty should be regarded as possibly malignant.

In making an examination, the patient is placed flat upon her back with both hands under her head. Her chest should be absolutely bare. She should not be asked which breast is affected. The breast tissue must not be picked up, but palpated by the soft pads on the ends of the fingers, with which both breasts should be gently rolled over the underlying thorax. Any swelling, nodule, or irregularity which is discoverable clinically, will be at once felt. The object of this examination is to discover: (1) whether both breasts contain nodules, swellings, or irregularities; (2) whether the breast of which the patient complains be the only one affected, or whether there is more than one lesion.

Should multiple lesions be found in both breasts, the diagnosis is probably chronic mastitis or cystic changes, or both combined. Should multiple swellings be found in one breast only, the diagnosis is, with some exceptions, in favor of chronic mastitis or cystic changes, and not cancer. But should only one nodule, swelling, irregularity, or even swelling surrounded by an area of irregularity, be found in one breast, it is probably a malignant tumor. Cancer of both breasts is rare, but not impossible; and a benign tumor may be found in one and cancer in the other. Hence, too much mental bias must not be allowed in any direction when only one lesion exists in each breast.

Having discovered swellings or irregularities in both breasts or only in one, the next point to be decided is, Can the skin covering the abnormal part be demonstrated to retract? This sign is best elicited by gradually and gently pushing the breast toward that part of the skin to be tested. The test is most delicate when the tumor itself is not pushed but when it is pushed indirectly by the fingers applied to a part of the breast well away from the seat of the suspected area. If present, the slightest retraction of the skin covering the suspected area of swelling can be noted. Retraction of the skin induced by this precaution is one of the

earliest and most constant of the classical and clinical signs of cancer. Chealte states that, as yet, he has never seen multiple nodules, swellings or irregularities in both breasts accompanied by retraction of the covering skin.

This retraction of the skin is caused by the invasion by the cancer of the fibrous bands which pass from the breast capsule to the skin. Later it may be caused by the adherence of the cancer to the skin itself or it may be caused by the attachment of the tumor to the underlying fascia. Retraction of the nipple as a sign is too much sought for, too long waited for, and, when found, is over estimated. It occurs in cancer early when the disease begins under or near the nipple. Otherwise it is comparatively late.

Hemorrhage or discharge from the nipple must always be regarded as a dangerous sign when no inflammation or obvious cause is present to account for it.

Nearly all papers dealing with tumors of the breast stress the importance of early diagnosis. Teachers of surgery and authors of text-books must inform students and doctors how a diagnosis of early malignancy is made, if it can be done. If we wait for deformity, retraction of the nipple, pig-skin dimpling, and axillary gland enlargement, we have waited too long. Alleviation at this time is probable, cure is impossible.

It is an axiomatic fact in the light of our present knowledge, that a benign growth demands excision and a malignant one the most radical operation the surgeon is capable of performing.

In a statistical study of cancer of the breast made by H. B. Wood,<sup>6</sup> of Harrisburg, Pa. we obtain the pertinent information that cancer is the fourth greatest cause of death in the state; and that, between the ages of 40 and 60, it comes next to heart diseases in the destruction of life. Malignant tumors were credited with causing 8.3 per cent of all the deaths in 1927, and tumors of the breast caused 8.8 per cent of the deaths from all malignant tumors. In Pueblo, for the years 1927, 1928, and 1929, there were a total of 1723 deaths from all causes. Of this number there were 115 deaths from malignant tumors, 8 per cent of which were tumors of the breast. Deaths from cancer of the breast are increasing 3 per cent annually.

A surprising fact is the great time between the discovery of the growth and the advent for operation. Two hundred and twenty-three cases analyzed by J. J. Buchanan of Pittsburgh, gave an average of one year, five months and five days from the time growth was known to have existed.



The average life period for a cancer of the breast is about three years. The average duration of life after operation is greater by two years than that of unoperated cases from onset to death.

Metastasis may occur anywhere. Operations must be done before it begins. Harrington<sup>7</sup> in 1858 cases states: "The best surgical results are obtained from primary radical operations—in cases without lymphatic involvement." In this group, 80.23 per cent are living after three years; 67.44 per cent after five years; and 52.94 per cent after ten years.

About half now going to the hospital are seemingly cured. These results are probably more favorable than in malignant lesions elsewhere in the body, with the possible exception of basal cell epithelioma of the face and lips, mixed tumors of the salivary glands, and encysted papillary malignant growths of the ovary. Harrington does not believe these results will be greatly increased by more extensive operation than the radical ones now generally employed. The results where lymphatic metastases exist at the time of operation are not so good. Of this group, 41.70 per cent lived three years; 25.75 per cent five years; and 12.23 per cent ten years. He states that it is unfortunate that this latter group comprised 64.37 per cent of all operated upon, and there has been little improvement in this percentage in the last ten years. In fact, it has gradually increased. Of this series of 1859 cases, 953 patients are known to have died from metastasis; 381 had local and distant metastasis, and 572 had distant metastasis but did not have local recurrence in skin or axilla. This again emphasizes the importance of early diagnosis and operation. In order of frequency metastasis occurs in: (1) supraclavicular region; (2) lungs, mediastinum and sternum; (3) abdomen; (4) spine, femur, pelvic bones and skull; (5) opposite breast and axilla. Whenever a patient who has had cancer of the breast begins to complain of backache, beware. In the great majority of cases spinal involvement has begun.

#### TREATMENT

Time will not permit any discussion of operative technic, the history of its evolution, or the opinions of operators concerning relative merits. We shall pass rapidly and briefly to other modes of treatment now in use. Burton J. Lee,<sup>8</sup> N. Y. Memorial Hospital, says, "Five-year results with irradiation alone or combined with radical operations, gives a higher percentage of five-year results than radical surgery alone. High voltage should be employed three or four weeks

before operation and again post-operatively."

Treatment of primary inoperable cancer of the breast by radiation gives relief from pain, heals superficial ulcers, improves general condition, and prolongs life. We have found this to be true in cases of this type treated at our Clinic.

Portman,<sup>9</sup> of the Cleveland Clinic, says intensive cross-fire irradiation is harmful and will increase the early recurrences; but, by the employment of repeated doses of moderate postoperative radiation, the number of three-year survivals will be increased.

L. B. Morrison<sup>10</sup> says that inoperable cancers of the breast live at least one and one half years longer following roentgen therapy and are much more comfortable. He also believes that preoperative radiation, if properly used, increases the chances of a surgical cure.

On the opposite side of the question as to the value of x-ray, we quote: "Preoperative x-ray treatment has little to recommend it. Experiments in animals have shown that the lymphatics cannot, but the terminal arteries can, be closed by its use. Therefore, to use x-ray preliminary to operation on the assumption that it will make operation safer by closing the lymphatics, is wrong if we believe in the spread of cancer by the permeation method. On the other hand, if we believe in the embolic theory, it may do good." (Wood<sup>11</sup>).

Infection following operation is said to occur more frequently when x-ray is used preoperatively.

Harrington<sup>7</sup> informs us that in his series of 1859 cases, the average length of life of all with metastasis treated by x-ray was twenty-seven months. The average of a similar group not receiving x-ray was thirty-eight months. These results show the ineffectiveness of the x-ray in metastasis or recurrent lesions, and again emphasize the importance of complete removal at the operation.

In the January, 1930, issue of the American Journal of Roentgenology, there is an abstract by Herman Wentz on "Results of Radiation Therapy in Uterine and Mammary Carcinoma." The method employed by this author is that of roentgen therapy alone. He divides his breast cases, totaling 625, into three classes:

1. Operable: 72 cases, 79 per cent, symptom-free at the end of three years; 66 cases, 53 per cent, symptom free at the end of five years.
2. Inoperable mammary carcinoma: 65 cases, 20 per cent, symptom-free at the end

of three years; 50 cases, 12 per cent symptom-free at the end of five years.

3. Irradiation in recurrences: 165 cases, 34 per cent, symptom-free at the end of five years; 136 cases 19 per cent, symptom-free at the end of five years; 71 cases, 10 per cent, symptom-free at the end of eight years.

He states with positiveness that the more advanced cases yield better results when treated by x-ray than by surgery alone.

Our foreign brothers appear to favor the use of x-ray and radium in the treatment of breast cancers.

Just what the end results will eventually be, no one can forecast; but that a cure will be found, is the earnest prayer of all.

#### CONCLUSIONS

1. All practitioners of medicine should stress the importance of stated regular physical examinations.

2. In early diagnosis rests the secret of operative success in cancer of the breast.

3. The proportion of benign tumors of the female breast is greater than is generally quoted.

4. Removal of breast with thorough cleaning out of all glands is often, but not always, justifiable in advanced cases.

5. Eventually a cancer cure will be found.

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#### DISCUSSION

DR. J. R. VAN ATTA, Albuquerque, N. M.: It has occurred to me that the family history might enter into these cases. A woman came to me with an extremely bad cancer history, all of her sisters and aunts on her mother's side having had cancer. I removed her right breast with radical operation. Just exactly one hundred days from the first operation, she returned and said she had a stinging pain in the opposite breast; that breast was removed on the basis of this stinging pain and a nodule which you could not satisfy yourself was present, and it was found to be carcinomatous. I felt chagrined that I had not elicited some evidence of the involvement of the other breast when only a hundred-day period elapsed between the two operations. She came to me the first moment she discovered the nodule. She knew the value of early diagnosis. The principal point is that there

was apparently a hereditary taint in that family. The history is very important and I think as much so as the physical examination.

DR. R. O. BROWN, Santa Fe, N. M.: This reminds me of Maude Slye's work with white mice. It seems to me it contains a lesson for every physician in the country to be sure and investigate the family history for cancer, especially when there is any suspicion of cancer in the breast, as, beyond question, there is a strong hereditary influence.

DR. BAKER (Closing): In a paper of this kind it would take too much time to discuss the various and different phases which we should enter into upon making reports on tumors of the breast, but we should all realize the importance of taking careful histories in these cases, as Dr. Van Atta has brought out. About twenty years ago, there were published cancer abstracts and you could see the number of cases of cancer in your records, where reported cancers had been found among the members of a family.

I wish to thank the New Mexico Society for a wonderful time and hope I may have the pleasure of meeting with you again.

### HYSTERECTOMY. A TECHNIC ANALYSIS OF 604 CASES

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(Read before the New Mexico Medical Society, at its forty-eighth Annual Meeting, at Raton, N. M., June 4-6, 1930.)

#### INTRODUCTION

Since Atlee reported the first hysterectomy before the American Medical Association in 1853, numerous articles have appeared in the literature concerning its technic and indications. It is only in the last two decades, however, that such writers as Kelly, Cullen, Mayo, Peterson and Lynch have reported their complications, morbidity and mortality. While a surgeon's recoveries greatly outnumber his fatalities, there is considerable value in placing these on record.

Our chief concern should be to keep mortality at a minimum. We must also endeavor to reduce our complications and improve surgical convalescence. Polak, and one of the writers (DGT) have shown that the preoperative analysis of the patient's condition, avoidance of multiple operations, will reduce morbidity and mortality. The type of work of Dr. Peterson at Ann Arbor, in classifying gynecological risks, is an important contribution to surgery, as well as an essential to success.

Indication for the removal of the uterus should be greatly reduced with the advent of radium and x-ray: for endometrial hyperplasia, small fibroids, and the so-called "fibrosis uteri" are well handled by this form of treatment. Soiland, Costolow and Meard have recently reported 562 cases treated by radiation, with no mortality, and with only seventeen requiring subsequent



removal. A word of warning, however, may be sounded in this regard, as the contraindications to the use of this form of treatment are definitely defined and surgery is still the choice of treatment in the large majority of bleeding uteri.

Conservation of the uterus should be practiced by all surgeons, for in spite of the ruthless sacrifice of the organ because of insignificant pathology or disease of the tubes, no one has yet shown that the muscular structure, which is the seat of the menstrual response and the protective cavity for the developing fetus, does not have some other function in the physiology of the female. Removal of the uterus must be done only when the weight of the evidence indicates that its extirpation is both beneficial and a necessity.

In analyzing 604 hysterectomies, we have attempted to present our findings in four divisions, as follows.

1. The preoperative status of the patient
2. The operation
3. The complications and morbidity
4. The immediate mortality and convalescence.

#### PART 1.

##### The Preoperative Status.

The ages of all types of cases are listed in Table 1:

Table 1.—Age Incidence.

20-29 years	6.0%
30-39 "	35.6%
40-49 "	45.3%
50-59 "	10.0%
60-69 "	1.8%
70-76 "	0.4%

Youngest, 20—oldest, 76.

These percentages correspond quite closely with those of Lynch in his series of 683 fibroids. It will be noted that the largest percentage of patients developed uterine pathology in the late thirties and forties.

##### Marital State and Pregnancies.

Forty-four patients had never been married, while in twenty-five this point was not stated. Of the remaining 535, eighty-one were sterile, forty-two had been pregnant, but had no children, sixty-six had one child and fifty-eight had two children. Disease of the uterus naturally lowers the fertility of the individuals. However, in over half of the cases, the uterus was not removed until the usual child-bearing period was past. In many instances patients had been followed for several years before operation was performed and some never required surgery. Fibroids without symptoms need watching, not surgery.

##### Symptoms.

Eighty-nine patients of the 590 complained of menorrhagia or metorrhagia or both.

In 197, bleeding was associated with enlargement, tumor, pain, or miscellaneous symptoms. Disease of the uterus is indicated by hemorrhage from the endometrium in nearly half the cases. Pain was given as the only symptom in eighty-three. The complete resume of the symptoms is tabulated in Table 2.

Table 2.—Symptoms

Hemorrhage	89
Menorrhagia	42
Metorrhagia	18
Both	29
Hemorrhage and pain	80
Hemorrhage and enlargement	16
Hemorrhage and miscellaneous	101
Pain	83
Pain and miscellaneous	74
Tumor or enlargement	34
Miscellaneous	86
Vaginal discharge	10
Prolapse	9
Not classified	14

Miscellaneous refers to symptoms of the gastrointestinal, genito-urinary, or neuromuscular systems.

Our routine procedure calls for complete history, physical examination, urinalysis, blood count, and serology. Physical examination revealed five patients with active tuberculosis. There were four definite cardiac lesions, with numerous references to poor myocardium and low cardiac reserve. Thirty-eight patients had a systolic blood pressure of 160 mm. of mercury or above. There were eight diabetics. One hundred patients showed a trace or more of albumin in the urine, twenty-five showed casts to be present, and in thirty-one the urine contained a large number of pus cells. There were nineteen patients with 4 plus Wassermanns. There were seventy-seven patients who had a hemoglobin below 60 per cent. There were also seventy-seven who had a leukocytosis of 11,000 or more. There were, therefore 306 patients who showed some factor which would place them in the class of poor surgical risks. Twenty-three of the anemic patients were transfused. While it is generally accepted that patients should not be operated upon with an elevation of temperature, twenty-four of this group were operated upon with temperatures of more than 99 degrees. All cardiacs, nephritics, and diabetics were hospitalized for from three days to a week before operation was performed. This has been found to be a great asset in improving the surgical risk—while the average hospital has but little authority in saying who can or cannot operate, for the protection of the patient there should be a minimum period of forty-eight hours of observation on all elective surgery. Two days' rest before operation would be more advanta-

geous than the thirteenth or fourteenth day postoperative in the hospital.

The cry for reducing hospital expense is disinctly increasing the danger of hurried elective procedure, and, unless controlled by surgeons, dangerous complications will result. Over 85 per cent of the patients operated upon in this group have been observed at least three days before admission for surgery. During this time the laboratory tests are made, incident to a complete study, and the patient is then accepted or rejected for immediate operation.

Previous operations further increase the risk of surgery. The adhesion and scar tissue make the operation more difficult, and foci of infection may be activated. A classification of previous abdominal operations is shown in Table 3.

Table 3.—Previous Operations.

Number of patients having previous lap-		
arotomies	120	
" " pelvic operations	36	
" " pelvic operations and		
appendectomy	39	
" " appendectomies alone	35	
" " previous upper and lower		
abdominal operations	6	
Miscellaneous	4	

Two patients had had nephrectomies and, in summarizing, it will be noted that 79 9patients had their appendices out before operation for hysterectomy.

PART 2.

The Operation

There were 527 subtotal hysterectomies, thirty-six total and four vaginal hysterectomies. Thirty-seven were called "hysterectomies" and are not classified. Their pathology and type of operation are tabulated in Table 4.

Table 4.—Pathology.

	Supra-cervical		Total		Not Class.		Totals	
	Recov.	Died	Recov.	Died	Recov.	Died	Recov.	Died
Fibroid	364	6	17	1	23	0	404	7
Fibrosis-metritis Endo-								
metritis-hyperplasia	51	2	3	0	3	0	57	2
Adenomyoma, uterus	14	0	0	0	1	0	15	0
Salpingo-oophoritis	21	0	3	0	3	0	27	1
Endometritis, acute	0	0	1	0	0	0	1	0
Carcinoma, uterus	7	0	5	1	1	0	13	1
Carcinoma, cervix	0	0	2	0	0	0	2	0
Carcinoma, polyp	0	0	0	0	1	0	1	0
Carcinoma, ovary	4	0	0	0	1	0	5	0
Carcinoma and fibroid	6	0	0	0	0	0	6	0
Sarcoma of fibroid	1	0	0	0	0	0	1	0
Interruption of preg.	1	0	1	0	1	0	3	0
Incomplete abortion	0	0	0	0	1	0	1	0
Pregnancy and fibroid	19	0	0	0	1	0	20	0
Polypi	8	0	1	0	1	0	10	0
Normal	7	0	0	0	0	0	7	0
Not stated	15	0	0	0	0	1	15	1
TOTAL	518	9	33	3	37	0	588	12

4 vaginal hysterectomies—all for prolapse; uterus normal in 3, fibroid in 1.

The technic that will be presently described is the subtotal type. The operations, with eight exceptions (spinal), were done under ether or gas-ether anesthesia. In only a very few instances was there any preoperative opiate. The advantage of ether lies in its safety, ease of administration after establishment, and the more perfect relaxation. It has a certain disadvantage which will be later reviewed.

After perfect relaxation, the patient is placed in the Trendelenburg position. The second most important step is an adequate incision. In nearly all cases, the incision extends from the symphysis to the right and slightly above the umbilicus, avoiding this fibrous structure. The little difference in the length of the incision should not be considered when it is of such unquestionable value in exposure without the presence of another pair of hands in the vicinity of the wound.

The corkscrew is then used to deliver the fundus and allow traction on the ligaments and bladder reflection. The round ligaments are then clamped close to their fundal insertion, and an incision made with a knife on the peritoneal reflection extending from side to side. This flap of peritoneum is then pushed down with a piece of gauze in thumb forceps, freeing the uterus in front. The broad ligaments are then double clamped and severed, pointing the clamp inward toward the body of the uterus. This usually exposes the uterine vessels, which are clamped close to the uterus with as little tissue as possible. With a knife, the uterus is then dissected from the cervix. A traction suture is now placed on either side of the canal, using No. 2 chromic catgut, tied, clamped, and held without removing needle. The cautery is then plunged deeply into the cervical canal about one centimeter in diameter and left open. The uterine vessels are then tied separately with double No. 2 chromic catgut. The broad and round ligaments are similarly treated, anchoring suture at both ends of the broad ligament to prevent retraction of contained vessels. The traction cervix suture on the left side is then opened to allow the left round and broad ligament stump to be brought into its grasp and further anchored by the needle in this suture. The opposite side is similarly treated, which supports the stump. The peritoneal flap is then brought over the contained stump, and all raw areas are properly covered with this flap. The cervical canal has then one layer of peritoneum over it, and the tissue distal to the tie which has an outlet through the vagina. This, we believe,



is an important step in reducing the morbidity in hysterectomy.

While no claim is made for the originality of the operation, the technic herein described differs in the treatment of the stump from that usually described in textbooks.

The presence of existing pathology in other organs will also increase the complications of uterine surgery. The routine examination of the upper abdomen revealed sixty-two gallbladder lesions, showing the importance of this palpation in elective surgery. The remaining pathology as listed was incident to the condition for which the uterus was removed. In 101 adnexal infections, twenty-eight uteri were removed because of generalized inflammatory process of the pelvic viscera, making the uterus a foreign body when no ovarian tissue was left.

Table 5.—Associated Pathology.

Gallstones	35
Cholecystitis	22
Distended gallbladder	4
Papilloma, gallbladder	1
Duodenal ulcer	1
Colitis	1
Acute appendicitis (ulcerative)	1
Adnexal infection	101
Ovarian cysts, simple	35
Ovarian cysts, multiple	42
Ovarian cysts, dermoid	9
Corpus luteum cysts	3
Cystadenoma	4
Pseudomucinous cyst	2
Adenofibroma, ovary	1
Teratoma, ovary	1
Ectopic pregnancies	2

#### PART 3.

##### Postoperative Complications and Morbidity.

In the 315 hospital charts analyzed, there were ninety patients who apparently had symptoms suggestive of head colds, acute coryza, or chronic respiratory disease. There were two definite broncho-pneumonias, eighteen who had bronchitis, and seventy who had tracheitis, pleurisy, pain in the chest, and received some type of treatment for this complication. This is definitely one of the troublesome complications, or the one disadvantage of ether inhalation.

There were seven cases of thrombophlebitis. Surgical shock (severe) six. Gastric dilatation, seven. Postoperative cervical hemorrhage, two. Vesicovaginal fistula, one (healed spontaneously).

The large incision may increase the possibility of infection. Thirty-nine patients had wound infections. A very troublesome complication is serum in wounds. One hundred and seven patients had such complications. There was only one wound rupture which was resutured with no untoward symptoms.

A patient was considered to have morbidity when the temperature was 100.4 on any

two days not including the day of operation. One hundred and seventy were morbid. Of these, fifty-four had more than three days.

Our morbidity was apparently largely due to wound infection, serum and pulmonary complications. Early in the series, the technic of the operation was responsible for a number of severe parametric infections and peritonitis. The drainage per vagina, we believe, is a definite advantage. On the fourth to sixth day, the patient had a discharge of necrotic material from the stump, which is the result of the cauterization, and the material distal to the ligatures under the peritoneal reflection.

#### PART 4.

##### (A) Mortality

There were twelve deaths in 604 cases, or a mortality of 1.9 per cent. In analyzing deaths, we must consider the preoperative status, the operation, surgical accidents, and postoperative complications.

The summary below shows three total hysterectomies, nine supracervical. Note that in seven cases there was evidence in the preoperative study that the patient was not a good risk. In one, surgical shock from hemorrhage resulted in death. Malignancy of the uterus in a woman of 76 may be classed as a poor surgical risk. In the remaining two, both developed mechanical obstruction and peritonitis, one had had a previous operation for pelvic inflammation, in the other appendectomy was done in addition to the pelvic operation.

In 311 hysterectomies performed in Peterson's Clinic, seventeen of which were radical panhysterectomies for cancer of the cervix, the mortality was 4.5 per cent and one half of the fourteen deaths were panhysterectomies for existing pelvic inflammatory disease. In our series of deaths, disease of the adnexa was present in six, three of which developed peritonitis.

Case 1. No. 4719, age 40, albumin in urine; leukocytes, 12,500, polys 90 per cent. Subtotal hysterectomy, bilateral salpingectomy and oophorectomy for fibroid and cystic oophoritis. Operation required one hour. Developed obstruction 4 days after operation. Reoperated on 6th day. Died 16 hours after operation to free adhesions between bowel and wound. Believed low grade infection and peritonitis caused by obstruction.

Case 2. No. 6098. Total hysterectomy for cervical fibroid—required two hours to remove. Patient was badly shocked, due to severe hemorrhage, died same day, possible clamped ureter, shock due to hemorrhage.

Case 3. No. 6990, age 51, hyaline casts and albumin in urine. Total hysterectomy for fibroids and repair of umbilical hernia, required 64 minutes. Iodoform gauze in vagina. Died in three days, of peritonitis.

Case 4. No. 9126, age 76. Total hysterectomy for adenocarcinoma. Died two weeks after operation, cause not stated.

Case 5. No. 15421 age 41. Trace of albumin and casts in urine—B.P. 234/140. Subtotal hysterectomy and right salpingo-oophorectomy for fibroid uterus. Died 19 days after operation; coma 36 hours, urea 25 mg. Chronic nephritis, chronic cholecystitis, chronic myocarditis, fibroid uterus.

Case 6. No. 14296, age 33. Temperature 99. Supracervical hysterectomy and right salpingo-oophorectomy for intraligamentous fibroid of uterus and hydrosalpinx; 82 minutes, considerable hemorrhage. Died 41 hours after operation, 1½ hours after gastric lavage. Possible ligated ureter. Cause of death, peritonitis.

Case 7. No. 20356, age 41. Temperature 102.6; pulse 124, leukocytes 26,800; polys 91 per cent. Supracervical hysterectomy and bilateral salpingectomy and appendectomy and drainage; 100 minutes. Hydrosalpinx, pyosalpinx, fibromyoma, acute endometritis, chronic appendicitis. Died 6 days after operation; peritonitis.

Case 8. No. 10618; age 38. Positive Wassermann, albumin in urine, pus cells in urine. Subtotal hysterectomy and perineorrhaphy for submucous fibroid and adenomyoma. Died 7 days after operation, of postoperative peritonitis.

Case 9. No. 25067; age 26. Faint trace of albumin in urine. Subtotal hysterectomy and oophorectomy. Previous operation for inflammatory disease. Died 8th day postoperative, of peritonitis—mechanical obstruction.

Case 10. No. 16022; age 43. Hemoglobin 41 per cent; leukocytes 9000; polys 80 per cent; temperature 99.4 before operation. Transfused, subtotal hysterectomy for submucous fibroid and adenomyoma. Wound infection. Died 11th day postoperative, peritonitis and sepsis.

Case 11. No. 27711; age 48. Temperature 99.4 before operation; cough. Subtotal hysterectomy, left salpingo oophorectomy, and appendectomy. Distention; vomiting; cough and cardiac. Died 9th day postoperative, of paralytic ileus.

Case 12. No. 12913. Endometritis. Subtotal hysterectomy and appendectomy. Curettage 4 days before. Explored for obstruction on 9th day. Died 11th day postoperative, peritonitis.

#### PART 5.

#### (B) Follow Up.

In the total of six hundred and four cases, sixty-four were not heard from after operation. Seventy-four patients had no relief of symptoms. Fifty-two patients complained of bladder symptoms. The operation might possibly be responsible, but in analyzing the hospital charts we find many patients whose bladders became overdistended. The fear of catheterization is so instilled in the nursing profession that many patients have the greater danger thrust upon them—bladder distention. The percentage of cystitis caused by faulty catheterization is very small, while overstretching of the bladder mucosa, plus stagnant urine, causes the large majority of these troublesome complications. The order of catheterization as necessary should be changed to every eight hours, and once after voiding for residual urine. Here, again, the frequent voiding of small amounts is rarely diagnosed as an overdistention, although this is a common nurse's report on a chart.

The second most common follow-up complication is vaginal discharge. Subtotal hysterectomy per se will not cure an infected

cervix. Fifty-three patients returned with vaginal discharge as their chief distress.

In this series not a single incidence of carcinoma of the retained stump was brought to our attention. Two cervical polyps developed, and one fibroid of the cervix, but in a relatively large series the cauterization may have been of some benefit.

In forty cases, the cervix was removed by the operation; in ten, trachelorrhaphy was used to reduce the size and repair the lacerated structure; in four, a partial amputation was done; in none of these return of this symptom. In eleven per cent, therefore, the operation did not remove one of the symptoms for which the surgery was performed.

Prolapse of the stump occurred in four instances. Three of these occurred early in the series and before the careful suspension with the round and broad ligament was used.

Five patients developed postoperative ventral hernias, which were repaired. In three instances, ovarian cysts developed in the retained glandular tissue. Eight of the diseased gallbladders with stones, which had been diagnosed six years before. One of the 279 retained appendices became acute and required operation.

As previously stated, seventy-four patients were not improved. In this group, the symptoms were pain, backache, and symptoms in associated organs. Most of the uteri in this group were classed as metritis, fibrosis and normal. The removal of the uterus will not cure a large number of these cases because the underlying pathology was apparently elsewhere.

Ten patients died, according to our follow-up: two diabetic, two malignancies, one tubercular. One patient developed an obstruction a year later and died following operation, one developed a brain tumor, one committed suicide, and in two others the cause was not known.

Of the total group, 140 patients had menopausal symptoms, or an evidence of 26 per cent. Symptoms occurred in 12.6 per cent where both ovaries were retained; 25.5 per cent where one ovary was left. When both ovaries were removed, 36.3 per cent had menopausal symptoms.

The following tabulation is of interest:

	Under 45 yrs.		45 yrs. and over.	
301 Hysterectomies- ovaries retained	44	14%	15	5%
176 Hysterectomies- one ovary removed	34	19%	11	5%
96 Hysterectomies- both ovaries removed	16	16%	20	20%
Total	94		46	

7 Transplants

3 had symptoms

4 Radium or x-ray before operation—no symptoms



A greater attempt should be made to conserve ovarian tissue. Endocrine products are satisfactory and should be used, but many patients are not relieved of these distressing symptoms by glandular therapy.

#### CONCLUSIONS

1. Hysterectomy in all types of cases should not carry a mortality greater than two per cent. In some series of fibroids it should be considerably less.
2. Even in the most careful aseptic technic, evidence of wound infection will be high because of the frequent existence of low grade pelvic infection.
3. Careful preoperative study and improving the general condition of the patient is more important than the rapid, carefully executed hysterectomy.
4. Ovaries should be retained whenever doubtful disease exists.
5. The cervix should be cared for at the time of operation.
6. Miscellaneous symptoms and palpable tumors should not be indication for operation.

#### DISCUSSION

DR. W. J. LATTA, Wagon Mound, N. M.: I think perhaps I saw the first hysterectomy that was successfully performed west of the Allegheny Mountains, in 1874, and by a doctor who had very little experience in these things. The woman had a fibroid which bled very freely. In those days they did not know much about radium. The woman made an uneventful recovery and I saw her forty years later (she was 30 years old at the time of the operation) and asked her about herself, and as to the effects of the operation. She replied that it made such an enormous change in her mentality and general feeling that she would rather have died than not had the operation performed.

DR. P. G. CORNISH, Jr., Albuquerque, N. M.: I am very much interested in the analyses of these hysterectomies. The mortality and morbidity are very low. It seems to me that in hysterectomies, the percentage of wound infections—and there is quite a large percentage in this series—is probably due to infection in the cervix. In technic where the cervix is left open quite a long time, I should not be surprised if that was the cause of the wound infection. Personally, I like to get the cervix closed as soon as possible after it is cauterized. I do not know that there is any particular advantage in leaving it open. Dr. Tollefson's paper is certainly a very interesting analysis of a great many cases, showing excellent results.

DR. TOLLEFSON (closing): In regard to the cervix, I had never seen this same thing done in my training. The reason Dr. Moore changed to this technic was that quite a few would have an elevation of temperature about the fourth, fifth or sixth day. In such cases, he would stick a clamp up into the cervical canal, establish drainage, and the temperature would come down. Leaving the cervix exposed is probably one of the factors in wound infection. However, every attempt is made to keep anything threatening away from low-grade infections existing in the pelvis.

I wish to express my appreciation and thanks to the Society for inviting us to read this paper.

## PHYSIOLOGICAL AND CLINICAL ASPECTS OF KIDNEY DISEASE

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(Read before the New Mexico Medical Society, at its forty-eighth Annual Session, at Raton, N. M., June 4-6, 1930.)

The concept of kidney disease has undergone considerable change during recent years. Professor A. N. Richards has devised methods to give us better knowledge of the normal function of the kidneys. Chemical studies of the blood and body fluids; detailed histologic studies of the diseased kidney; routine use of the blood-pressure apparatus and of the ophthalmoscope have added to our understanding, and today we have a clinical concept of renal insufficiency which is somewhat different from that held by the older physician.

#### FUNCTION OF THE KIDNEYS

The kidney is the chief excretory organ of the body. Its function is to excrete water, to excrete waste substances of body metabolism, urea, uric acid, creatinin, and to maintain an acid base balance for the body economy. When an excess of acid is present in the body, base is retained by the elimination of acid phosphate. The regulation of water content is by far the most fundamental and most sensitive function. Cushney places the maximum capacity of the normal kidney to excrete water as one liter per hour. Cases of diabetes insipidus have been reported in which twenty liters of urine have been eliminated in twenty-four hours. Frequently cases are observed where an intake of one liter of water is followed within two and one half to three hours by its total excretion as urine. Diuresis usually begins in one half to three quarters of an hour. This functional ability of the kidney to excrete an excess of water is made use of clinically by the so-called "water test" of Volhard. Fifteen hundred or, preferably, 1000 c.c. is taken on an empty stomach and its time of elimination observed.

The ability of the kidney to prevent the elimination of water is equally efficient. In hemorrhage, severe diarrheas and dysenteries and in profuse sweating, the extreme loss of water may go to the complete suppression of the urine. Under normal conditions, however, the urine is concentrated: only sufficient water eliminated to keep in solution the waste substances being eliminated. So we may measure this concentrating power by two-hour determinations of the specific gravity.

Our knowledge of the manner in which the kidney performs this function has been greatly enlarged by the work of Professor

Richards. The glomeruli are tufts of arterial capillaries. As the blood passes through them, a deproteinized solution containing the other constituents of the blood plasma passes out of these capillaries and the covering membrane of Bowman's capsule. This enormous capillary surface of the kidney is not always open in its entirety for the passage of blood, for if the capillaries were all open, a kidney excreting one half a liter an hour would not be able to excrete half a liter in twenty-four hours. Richards has shown that only a limited number of these glomeruli are open capillaries at one time, and that these glomeruli open are dependent upon the amount of water the kidney has to excrete. He has further shown that the activity of a single glomerulus may vary. When the protein free solution has passed out of the glomeruli, it passes through the lumen of the convoluted tubules, the cells of which absorb the substances, water, sugar, salt and base which the organism needs in its economy.

In the excretion of waste substances of protein metabolism, the kidneys are almost alone concerned. Urea, uric acid, creatinin and some other undetermined substances of the total nonprotein nitrogen of the blood will be excreted by the kidney until two-thirds of the kidney substance is destroyed. When more than two-thirds of the kidney is out of commission, then only will these waste substances be retained in the body. When kidneys are able to excrete an excess of water in a certain minimum period of time, when they are able to concentrate the urine to a certain maximum degree; when they are able to eliminate waste substances under all possible conditions of natural protein intake, they are normal efficient kidneys; when they cannot do this, they are spoken of as insufficient.

The loss of function of excreting waste substances being the last to be manifest in kidney structure loss, it follows that retention of nonprotein nitrogen represents an absolute insufficiency, and this may be measured by the amount of the nonprotein nitrogen and creatinin in the blood plasma.

Between the normal functioning kidney and the absolute insufficient kidney indicating two-thirds destruction of the organ, there is a wide range. All grades of lengthening of time of water excretion, all grades of diminution in the ability of the kidney to concentrate the urine, occur with kidneys still able to excrete waste substances. When the highest specific gravity of the urine cannot go above 1018, one knows the kidneys are relatively insufficient to that degree. When the ability to concentrate is at its low-

est ebb, the urine remains fixed at about 1010 to 1012, and its concentration is about the same as the molecular concentration of the protein-free blood plasma. The tests, therefore, for determining the relative insufficiency are the water excretion test and the two-hour concentration test. The tests for absolute insufficiency lie in the above tests with the chemical examination of the blood for retained nonprotein nitrogen. The dye test of kidney function has not maintained its early clinical importance, excepting in the hands of the urologist, as a rapid measure of separate kidney function. Under a wide range of conditions, phenol-sulphonaphthalein and indigo carmine may show marked variation, and the range of 40 per cent to 60 per cent of the dye being excreted restricts its use to an indicator of the completely inefficient kidney.

#### CLINICAL RENAL DISEASE

The changing clinical symptoms of kidney disease often lead to confusion in interpreting the renal lesion or the disease.

One or more of the following clinical signs are always present in kidney lesions:

1. Urinary findings.
2. Edema.
3. Blood pressure—hypertension.
4. Nitrogen retention—blood chemistry.
5. Ophthalmoscopic findings.
6. Uremic.

Every physician has struggled to interpret one or more of the above symptoms into terms of the actual kidney lesion. In the nephritides, in the nephroses, in the hypertensive states, in arteriolosclerosis, and atherosclerosis, in cardiovascular breakdown, these clinical signs present themselves. We have familiarized ourselves with various classifications of nephritis at the present time—acute nephritis, subacute nephritis, subchronic nephritis and chronic nephritis have become an excellent working classification. Distinguished from them, however, we now have the condition called "the nephroses."

#### NEPHROSES

In 1905, Mueller used the term nephroses to designate tubular degeneration of the kidney in distinction to the term nephritis, or glomerular inflammation. In 1914, Volhard and Fahr in a monograph used this term to classify clinically cases in which there was no evidence of inflammation of the glomeruli at autopsy, but still present clinical evidence of renal disease; albuminuria and edema. The pathologic changes in the kidney included all forms of tubular degeneration and necrosis. At the present time, nephrosis is used in a pathologic sense. Clinically, in febrile diseases, we find albu-



minuria, and histologically, cloudy swelling of the tubules. To speak, therefore, of a nephrosis as the urinary finding of a pneumonia, or a typhoid, is to raise an important clinical symptom to the dignity of a disease. Nephrosis may, however, justifiably be used as a term to define a group of kidney lesions that are well defined: bichloride poisoning, kidney of pregnancy, amyloid disease and lipid nephrosis.

#### LIPOID NEPHROSIS

Volhard revived the term nephrosis to classify this definite clinical syndrome: oliguria; marked albuminuria; marked edema; paleness of the skin; increased lipoids and cholesterin in the blood; absence of hematuria, hypertension and cardiac hypertrophy; and without evidence of renal insufficiency.

I am at the present time observing five cases in which this diagnosis of lipoidal nephrosis is still under question. In all the cases, the disease began insidiously, and has run a chronic course. The severe albuminuria in each case has reduced the albumin portion of the blood plasma with a relative increase of the globulin portion and repeated readings of from 3 to 10 grams of albumin per liter are obtained. Oliguria from day to day is usually present. In two of the cases, the cholesterin of the blood, which normally should be 0.21 per cent, is increased to .5 per cent and .72 per cent respectively. Fatigue and pallor are a constant observation. In two cases the first symptom that drew attention to the illness was edema of the ankles. The specific gravity may be very high. In my study, hyalin and granular casts and lipoidal bodies were found. Two-hour concentration tests show no fixation. Blood pressure remains normal, and basal metabolic rate is uniformly reduced to -15, -20 in all cases of these five. It must, however, be stated that this clinical entity of lipid nephrosis may appear as a phase of acute glomerulo-nephritis as well as a separate clinical entity. Murphy recently reported a case of chronic glomerulonephritis showing at one time all the characteristics of a lipid nephrosis. He observed this case for a period of five years. As the disease progressed hypertension and renal insufficiency ensued.

When the symptom complex of lipid nephrosis is found without evidence of nephritis, one is unable to tell whether one is dealing with a case of pure lipid nephrosis or with the symptom complex occurring as a transitory phase in the course of a nephritis. One case—a man 20 years of age, with the gradual onset of fatigue, edema of ankles and eyelids, pallor, slight sub-

cutaneous edema, basal rales, oliguria, albuminuria, casts, no hematuria or blood cells in the urine, normal blood pressure and kidney function and lipoidal bodies in the urine with hypercholesteremia; all of these characteristic manifestations of lipoidal nephritis—has further evidence of advanced pulmonary tuberculosis. The question immediately arises whether this, perhaps, is not a case of amyloid nephrosis.

The nephrosis of pregnancy, or mercuric chloride poisoning, amyloid degeneration of the kidney, must be differentiated and classified on a basis of its etiology.

#### GLOMERULONEPHRITIS

The changeableness of the symptoms of chronic nephritis often leads to confusion in the proper interpretation of the clinical picture in some stages of the disease. Lohlein has shown that all forms of nephritis have their beginning in an acute diffuse inflammation of the glomeruli. He further showed that all of these cases of glomerulonephritis that are of longer standing than the acute form, fall into three groups. One form has a short stormy course with edema, marked changes in kidney function, albumin and blood cells, granular and fatty casts, early blood retention with increase in blood pressure, and eye-ground findings. These cases may well be classified as subacute glomerulonephritis. They have a fatal termination within a few months. In the second group, the character of the disease is milder and lasts from a few months to one, or even two years. They correspond to the subchronic form of glomerulonephritis. The third group run a very chronic course over many years. Both the second and third groups may be further divided on the basis of whether they show edema. They are easily confused with cases having cardiovascular degenerations and cardiac breakdown, high blood pressure, nocturia, fixation of the specific gravity, lowered phenolphthalein output with, as a rule, slight trace of albumin and other minor evidences of inflammation of the glomeruli. These cases are subject to frequent acute exacerbations, and occasionally periodic hematuria. The nonprotein nitrogen gradually rises as absolute insufficiency takes place, and uremia closes the picture.

#### BENIGN AND MALIGNANT SCLEROSIS

Another modern clinical concept of kidney disease is the cases of benign and malignant arteriolosclerosis with and without renal insufficiency. Volhard demonstrated the obliteration of a greater or lesser number of the glomeruli of the kidney without inflammatory changes. These show a chronic hypertension, variable to late middle life, when

they become permanent hypertensive cases. They are familiar to us all under the name of "hyperpiesia or benign hypertension." Dyspnea epistaxis, high blood pressure for many years, left ventricular preponderance, are the prominent symptoms. The urine shows a trace, or no, albumin, hyalin casts, some impairment of renal power to eliminate fluids: but these cases do not die of renal insufficiency, but of intercurrent infections, of diseased coronary arteries, or arterial accidents of the brain.

It is noteworthy that among the group of chronic hypertensive cases there is a small group in whom, after prolonged hypertension, profound renal insufficiency will supervene. These cases are the malignant renal sclerotics. Many of these cases are being reported. Without discussing the histological process of its production, the kidney gradually fails in its function, nitrogen retention supervenes, and gradually becomes more pronounced. Clinically these are cases of hypertension of many years' standing, in which is gradually added renal insufficiency; inflammatory changes in the kidney being absent.

In conclusion, the purpose of these remarks is to point out the importance of some of our present methods of clinical diagnosis of renal impairment, and to sketch a working classification for the study of kidney disease.

### DISCUSSION

DR. R. H. FINNEY Pueblo, Colo.: This is a very interesting subject. There has been so much work done in the past ten years in trying to work out a classification of kidney diseases that it makes it most interesting in physiology. I certainly do not want to say one word that would take your minds away from this excellent physiology Dr. Heller has blocked out, and I do not intend to get away from that line but for general practitioners let us call any of these diseases Bright's disease, rather than to say this is Bright's disease, this is nephritis, and so forth. Let us make it as simple as possible and say Bright's disease. However, there is more than one disease in the kidney function. Dr. Heller has brought out the physiology up to the present time, as much as is known about it. There is a great question as to what nephritis is and where it belongs in the classification. When it comes to making a diagnosis, putting down our preliminary diagnosis and final death certificate diagnosis, I try to come down to one of three:

(1) Hemorrhagic nephritis in which there is an acute condition—first, regardless of how it gets later. Some of them clear up never to return again. In that case there is blood and very little else, unless perhaps a little albumin. It may be from an acute inflammatory condition, scarlet fever, or some streptococcal infection.

(2) Degenerative nephritis, which is very broad, but takes in all degenerative conditions. In this, degenerative debris is found in the urine, but no blood, and rarely red blood cells. It might include Bright's disease of pregnancy and there are many others so intermingled with this degenerative type, I usually call them degenerative nephritis and let it go at that.

(3) Arteriosclerotic nephritis in which some albumin, sometimes some little hypertension and arteriosclerosis changes are found throughout the kidney. There are no red blood cells and no degenerative cells to amount to anything. These are the three types used by me in a diagnostic standpoint.

DR. J. F. PERCY, Los Angeles, Calif.: I should like to ask Dr. Heller if he has made any study in regard to the relationship of lipoidal nephritis to the so-called nephritis of Epstein, and whether or not these two conditions bear any relationship to each other. I am really interested in this because of some work that I did years ago. I published two papers, one in 1912 and the other in 1913, in reference to the relationship of the thyroid to changes found in the kidney. It is an exceedingly interesting subject.

The best treatment for such cases is the administration of very large doses of thyroid extract. In my own mind the nephritis of Epstein is nothing more nor less than what has been mentioned under the general term of nephritis. The excessive amount of albumin in the urine in these cases is most remarkable—in fact, the urine of all these individuals is really a menagerie. I remember one specimen I kept for many years and exhibited it, as you could find there anything that you wanted. Many of these cases, however, absolutely clear up and get well through the administration of thyroid extract. My attention was first directed to this condition because of a patient I had who had an enormous cystic goiter—a man. He got entirely well under the administration of thyroid extract.

DR. HELLER (closing): In regard to the nephritis of Epstein, he classified all nephroses together and the separation is taking place at the present time, since his publication. To say that this or that case is lipid nephritis is a very difficult task just now, but such cases are being found. They are going along much as Dr. Percy has indicated. With thyroid treatment many are remarkably improved, even being discharged as well, in a number of instances. Other cases so treated, however, show no improvement.

The interesting feature under study at the present time is to decide whether the process of nephrosis is one in which pneumococcus is a contributing factor.

I am very glad that Dr. Percy brought out the matter of treatment, because the treatment of lipoidal nephrosis is still in an experimental stage. Treatment of lipoidal nephrosis of pregnancy is being tried with thyroid extract. As to the problem of uremia, I think this subject is tremendously misunderstood. We have not arrived at a very wonderful point in a better chemical and physiological knowledge of this process. There are some who believe that there is a toxic element in the production of clinical manifestations of uremia; others believe it is simply an enormous accumulation of urea in the body, which produces it. Many of us think it can be a convulsive manifestation; others, that it can be simply a twitching and that the convulsion is not a necessary part of the disease. They are due to an opacity of the arteries of the brain and are not produced by the poison that produces the clinical manifestations of uremia. The stupor, respiration, and so forth, is a part of the picture. As to treatment, I firmly believe that sugar and water in every way possible are of advantage in many cases of uremia.

I have wanted to give you this from a physiological standpoint to the practitioner. Remember that your tests on kidney insufficiency or impairment are: (1) water elimination; (2) the power of the kidney to concentrate its urine. A kidney that can not concentrate above 1018 is a partially incompetent or insufficient kidney. A kidney that cannot concentrate its urine above the point 1012 is a badly insufficient kidney and you will find those tests to be of much value to you.



**"POTPOURRI"**

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(Read before the New Mexico Medical Society, at its forty-eighth Annual Meeting, Raton, N. M., June 4-6, 1930).

**Practical Points in:****A. EXOPHTHALMIC GOITER.**

Exophthalmic and toxic goiter cases are still reaching the surgeon, after they have tried all the other varieties of treatment, with cardiac decompensation, a severe degree of thyrotoxicosis, accompanied by swollen extremities, high degree of nervousness, tremor and enormous exophthalmus. We think the great majority of these cases could have been saved from this most serious condition, if they had been sent to the surgeon at a very much earlier date. Of course, practically all of the exophthalmic cases will respond to sufficient doses of iodine, but it must be remembered that iodine is not curative and the danger is that it may be used over a period of months or years and may finally lose its effect.

Now that iodine is found to be specific in temporary control of exophthalmic goiter symptoms, another confusion has arisen and that is the routine prescribing of iodine in goiter cases regardless of their nature. It seems well established that iodine in the ordinary non-toxic adenoma of the thyroid may cause it to become toxic. Therefore it appears that iodine should be reserved, first, for the control, not cure, of symptoms in exophthalmic goiter; second, there is probably no harm in giving it to the already toxic adenoma, as occasionally there are mixed types and some benefit may be derived; third, it is often of value in the adolescent or endemic goiter below the age of 16 or 18 years.

Haines, Mayo Clinic, states that cessation of iodine in cases of exophthalmic goiter will be followed, usually within four to six days, by return of the characteristic symptoms.

We think prospective operative cases of exophthalmic goiter can be better prepared for surgery by the operating surgeon, as there is much to be gained by him in his estimate of the surgical risk after he has had some considerable contact with the patient over at least the preparation period of time. He cannot make a proper estimate of the surgical risk in one or two interviews only.

We are of the opinion that, among the rank and file of the profession, too small doses of iodine are given ordinarily; it will require ten minims of Lugol's solution three times a day to hold the symptoms in check, and during a crisis, or for intensive preparation, fifty to a hundred minims a day.

**B. TREATMENT OF SERIOUS POSTOPERATIVE ABDOMINAL CONDITIONS.**

We think in recent years there has been a tendency not to take advantage of all the accessories in the postoperative treatment of serious abdominal surgical cases. We have drifted more or less into the routine of doing the operation, putting the case on a standardized routine to be carried out by assistants or internes.

Tight dressings following abdominal operations are among the first faults. They restrict breathing, cause discomfort from increased pain and pressure, and certainly have but little to their credit. The duodenal tube for postoperative vomiting and distention is of the greatest benefit:

1. The tube relieves conditions due to gas and regurgitated intestinal fluids. It is a vent pipe.
2. It affects interrupted or continuous lavage of the stomach and, in some cases, of the duodenum.
3. It gives relief from nausea.
4. It makes possible the free drinking of water and thereby relieves that most distressing symptom, thirst.
5. It permits transgastric feeding.
6. It relieves toxemia.
7. It is a port of entry for all kinds of medication.
8. It improves the feelings of all patients; they often beg for its return after they have once experienced the relief afforded by its use.

Murphy drip and large quantities of saline subcutaneously, 1000 c.c. every six hours. In peritonitis, 1000 c.c. hypertonic salt solution 3 per cent every eight hours for three doses. Massive hot packs, as advocated by the late Dr. Ochsner, kept hot by electric pads. When the pulse is inclined to be rapid, we have derived benefit from twenty minims of some good hypodermic preparation of digitalis, often combined with thirtieth or fortieth of strychnine to increase tone of intestinal muscles. Where there is prolonged inability to take food, 1000 c.c. of 2 per cent glucose in normal saline intravenously may be used instead of the normal salt solution.

There is only one objection to the intravenous glucose, that is, occasionally, in spite of all precautions, there will be chill and fever reactions.

**C. OSTEO-ARTHRITIS.**

In this brief discussion of osteo-arthritis, we are referring particularly to the "creaking knees," characterized by a moderate degree of soreness, giving way, temporary locking, swelling and pain after exercise. These symptoms usually are of long standing. They may, however, occur in young ath-

letes who have had injury to their knees. We operated upon one case with loose bodies and erosions, at the age of 19, following football trauma.

This group of cases outside of the orthopedic hospitals usually pass from doctor to doctor without receiving much benefit and they are excluded from taking part in the more strenuous affairs of life. X-rays often show lipping of the articular margins and very often loose bodies. After these attacks of giving way and temporary locking, there is fluid for some weeks.

We have been neglecting these cases because of the long fear of opening knee joints, a feeling of hopelessness in finding all the loose bodies, and a lack of knowledge as to the relief that may be given aside from their removal; that is, by removing broken cartilages and hypertrophic synovial fluid often containing chondromas. A great many of these cases are benefited and are able to carry on a practically normal existence even after the articular cartilages have been nearly destroyed by removal of the vegetations in the knee joint and loose or unloose bodies.

The above can be accomplished only by very liberal exposure of the entire knee joint, which is admirably accomplished by the incision of Fisher. This incision begins above and over the center of the quadriceps tendon, three to four inches above the patella, comes down until the upper border of the patella is reached, then around to the inner side and back to the center of the patellar tendon, and on to the attachment of the tendon to the tibia. The skin and superficial fat are reflected back each way, the outer flap to the outer border of the patella. A straight incision is then made into the fascia, following exactly the same line as the skin incision except that it goes directly over the patella. The fascia is reflected well to the inner side. The synovial sac is then opened along the inner side of the patella and split the entire length of the other incisions. The tendon at the upper border of the patella is seized by heavy vulsella forceps and the patella is completely displaced to the outer side of the joint. The joint is then wide open. For a more complete inspection the leg is then flexed past right angles, exposing the whole upper end of the tibia. The upper compartments of the synovial sac are readily accessible and any loose bodies can be milked into the joint. After the loose or attached bodies are all accounted for, any synovial villi hanging into the joint cut off, the joint restored as nearly as possible, to normal, the wound is closed in three layers: the synovial sac with No. 0 ten-day chromic; the fascial

layer with No. 1 chromic; and the skin preferably with clips. The leg is then put on a posterior molded plaster splint with moderate flexion. The leg is elevated in bed. The splints are usually removed in about ten days and passive motion is begun.

#### D. COMPRESSION FRACTURES OF THE VERTEBRA.

In recent years there has been great forward movement in the recognition and treatment of compressed fractures of the vertebra. We have learned that they may be caused by trivial accidents and often in the beginning have comparatively trivial symptoms. We purposely say "in the beginning" because, if they are not recognized, the disability progresses for months and months. As these fractures are produced by hyperflexion of the spine, heavy objects falling on the head, or by stiff-legged falls, a carefully taken history of the accident will often suggest an x-ray of the spine. Too often, even yet, many of the cases are going from the third to the sixth week, when it is found that the patient's symptoms are gradually worse, and when an x-ray is taken and a compression fracture is found. It should be absolutely routine in any spinal picture, for trauma or otherwise, that a two-way picture be taken.

After the fracture is diagnosed, the patient should be treated on his back on a convex bed for at least three months, and wear a well-fitted weight-supporting and hyperextension brace for at least a year. Cancellous bone does not heal and calcify as quickly as the harder bones, hence, the deformity is inclined to increase under the body weight. Not only is the body weight taken off of the fracture, but extension is accomplished on a convex bed. This may be easily constructed by simply putting comforts and blankets under the center part of the mattress.

This subject is of special interest to industrial and railroad surgeons, as the time has arrived when we cannot defend ambulatory treatment of compression fractures of the vertebra.

We refer to the following six cases reported by us under the title of "The Unrecognized Compression Fracture of the Vertebra," in 1925, as illustrative of the late recognition these cases were getting at that time.

Case No. 1.—G. D., a school girl, aged 13 years, went down a slide on the school grounds, three and a half months ago, at 9 a. m. She hurt her back and had to lie down for five minutes, but went on a hike at noon. Moderate pain continued, but it was two months before a physician was consulted. The important details in this history are that her buttocks hit the ground, and the nape of her neck, still being on the end of the slide, forcibly flexed her spine. Three months after the injury she had a deformity in the lower dorsal region, the pain was growing



progressively worse, and she was hardly able to be around without support. The diagnosis was a compression fracture of the body of the eighth dorsal vertebra.

Case No. 2.—A. E. S., male, aged 40 years, dived off a springboard into a pool and struck the bottom with the top of his head. This caused some pain in his back, but he finished his swim. It was three months later when he applied for medical attention, at which time he had a spinal deformity and progressively increasing pain, until he was unable to follow his trade as a car foreman. A crush fracture of the body of the eleventh dorsal vertebra was diagnosed.

Case No. 3.—J. D. J., a male, aged 30 years, fell off a motor-truck and "wrenched" his back. He had considerable pain at the time, but went about his duties for four months, at the end of which time the pain was becoming progressively worse, and he had an almost complete disability as a telephone lineman. He could give no exact details as to how he fell. He had a fracture of the body of the third lumbar vertebra.

Case No. 4.—W. A. P., a male, aged 50 years, fell off a carpenter's platform, six feet high, alighting across a saw-horse. He was unable to get up and walk without help, but had no paralysis. He was taken to the hospital and remained there for two weeks, when he had sufficient recovery to be up and about. He continued under the care of physicians, and was not considered seriously injured, as the usual anteroposterior x-ray pictures showed no bony injury. He was finally looked upon as a malingerer. Lateral pictures showed a marked compression fracture of the body of the first lumbar vertebra.

Case No. 5.—W. L. S., a male, aged 48 years, was a brakeman. A log rolled off a flatcar, throwing him backwards, his buttocks striking the ground about two feet from a tree. The upper part of his spine hit the tree, causing hyperflexion. He had some fractured ribs and an injury to his leg. Three months later he continued to complain of pain in his back, and it was discovered that some deformity had developed, and that he had a compression fracture of the body of the first lumbar vertebra.

Case No. 6.—W. T. E., a male, aged 46 years, a switchman, fell under a car and was rolled in hyperflexion, with his head against the ground. Anteroposterior x-rays were negative. Three months afterward, because he still complained of pain in his neck, x-ray pictures were very carefully made. These showed a fracture of the odontoid process of the axis, from excessive flexion of the neck.

#### DISCUSSION

DR. P. G. CORNISH, Jr., Albuquerque, N.M.: Dr. Brown, in speaking of compression fractures of the vertebra, reminds me of a case of mine—a man with complete ankylosis of the spine due to arthritis. This man was struck on the back by a rock. He came to the hospital with only a few abdominal pains, no other symptoms. These pains left within 24 hours and x-ray pictures taken at that time showed an old ankylosis of the spine; that a compression fracture of the body of the first lumbar vertebra had been missed, due to the fact, no doubt, that there had been so many arthritic changes. That was in December; in May, he was able to get around and about. He claimed he had paralysis of the bowels, which was chronic constipation. Our x-ray pictures at that time showed gradually increasing atrophy in the body of that vertebra, in spite of the complete ankylosis of the spine. This was quite a lesson to us to be extremely careful in the interpretation of x-ray pictures.

DR. R. H. FINNEY, Pueblo, Colo.: Relative to exophthalmic goiter, I have seen results of five cases operated under sodium amytal, which were very gratifying. This was just a preliminary experiment. Fifteen grains were given intravenously previous to

operation, the patient sleeping from 12 to 24 hours after operation, with little excitement and apparently good results.

DR. W. L. BROWN (closing): As time is very short, I want to say just a few words. The time has come when the orthopedic men have entered into the field of fracture; we general practitioners hesitate to tell a man he will have to stay in bed three or four or five months, though this is often necessary and should be done.

In regard to the use of sodium amytal in exophthalmic goiter, I remember that in many cases where it was used, it was often quite difficult to get up the mucus. That was our experience last year at Taos during the annual meeting of this Society. Right following that experience I went over to the A. M. A. meeting at Seattle; at one of the hospitals they invited me to see a case operated on with amytal and they had the same difficulty.

#### SIGNIFICANCE AND TREATMENT OF PLEURISY WITH EFFUSION IN PULMONARY TUBERCULOSIS

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#### ETIOLOGY

The factors causing a sero-fibrinous pleurisy are in most instances the same as those causing a dry pleurisy. It is thought that over ninety per cent of the cases of pleurisy with effusion are of tuberculous origin. Sometimes pleural effusions are associated with other diseases such as pneumonia, acute endocarditis, and septicemia, as well as with carcinoma, especially of the lung, and other acute and chronic diseases. As an example of this, one of our patients here gives a history of an effusion following scarlet fever, and ten to twelve years later he developed symptoms of pulmonary tuberculosis.

Some cases of primary pleurisy come on after an exposure to cold or dampness or after an overstraining of the body forces. A careful history will often show that the patient has been overworking or has been otherwise neglectful of the welfare of his body for several months or years. Perhaps he has not had the proper diet or sleep, or he has undertaken a long exhausting journey, or has been considerably exposed to inclement weather. A good reason will usually be found for his breakdown. Sometimes an injury to the chest is the apparent direct cause which generally acts as a contributory factor in localizing the tuberculous process to the traumatized pleura. Although a tuberculous pleurisy may be the primary manifestation of the disease, it is commonly secondary to a focus in some other part of the body. This primary focus will usually be found in one of the pulmonary apices; but the infection may reach the pleura from the

periphery of the lungs, the hilus, or a tracheobronchial gland through the lymph channels. In fact, the pleura may become infected through the blood stream from a focus in any part of the body. When a serous effusion complicates a pneumonia, it is not always certain that it was caused by the pneumonic inflammation. Some of the patients at Fort Stanton give a history of having a pleural effusion following pneumonia and of breaking down with pulmonary tuberculosis several years later. In some of these, it is possible that the tuberculous infection was present from the start and was the responsible factor for the effusion, instead of the pneumonia. A serous effusion should always be regarded with suspicion, even when associated with other diseases and a tuberculous focus can not be found. Pleural effusions are more common in men than women. They can occur at any age, but are most prevalent in young adults, as is pulmonary tuberculosis.

#### SYMPTOMS

Inflammation of the pleura is most frequently located in the apex of the lung. Pain is more commonly associated with pleurisy in the lower part of the pleura, along the anterior axillary line just below the nipple, as this is the site of the greatest lung excursion during respiration. The pain may be very piercing and require the strapping of the chest wall to relieve it. The reason that pain is more rarely experienced at the apices is that the movement of the lung there is minimal.

An effusion is usually preceded by pleurisy. The pain is usually lessened after the fluid forms, as the two pleural surfaces are then separated. The patient may note at this time, or before, some or all of those symptoms so often associated with tuberculosis; as, loss of weight, nervousness and irritability, easy fatigue, slight rise in temperature and pulse.

When the fluid forms there will be an elevation of the temperature. If the effusion is small in amount, the patient will probably not show any marked symptoms. On the side corresponding to the pleurisy he may note a sense of pressure, often a dull pain in the lower part of the chest. The temperature may not be higher than 100 or 101 F., but may last for several weeks. The patient may not be particularly annoyed by the presence of the fluid. Provided he is kept in bed until some time after the temperature has declined to normal, the effusion is generally gradually absorbed.

If the amount of the fluid is large, there will be a sense of pressure and tightness in

the chest and often a shortness of breath. There is often a dull pain referred to the upper abdomen on the side corresponding to the effusion. The patient will find that he can breathe more comfortably when lying on the affected side, leaving the uninvolved lung free for motion. The temperature may be elevated to 103 or 104 F., but usually subsides after thirty-six to forty-eight hours. In early tuberculosis there is often some nausea and it may be aggravated at this time, due to toxemia. There may or may not be a cough.

#### DIAGNOSIS

The diagnosis of a pleural effusion will be more easily made when the patient has been seen from the beginning, as close clinical observation is of great assistance. When the patient consults the physician after the acute stage has passed, it may be difficult to make a diagnosis from the physical examination alone, especially if the quantity of fluid is small. It is not always easy to determine between a pleural effusion and a thickened pleura. The use of an exploratory needle may be necessary. It is under these conditions that an x-ray is very valuable and often indispensable. The roentgenogram will help to differentiate between a thickened pleura and an effusion in most cases, even if the effusion is slight. The shadow cast by effusion, if there are no adhesions, is typical. It is a dense homogeneous shadow obliterating the costophrenic sinus and filling the lower part of the lung field. This shadow tapers and becomes less dense as it extends higher in the lateral or axillary portion of the lung field. The balance of the lung is hazy in comparison with its fellow, on account of compression and perhaps also due to a thin layer of fluid covering it. A horizontal fluid level is not seen except in effusions complicating pneumothoraces. No doubt the roentgenologic examination will save many patients from the diagnostic needle puncture.

The exudate should be examined microscopically and an animal inoculation done, especially in those cases where a diagnosis of tuberculosis has not been made. Tubercle bacilli are only rarely found microscopically. A negative examination of the exudate does not exclude tuberculosis as a cause of the pleurisy. Guinea pig inoculations are more often negative than positive and here, too, a negative experiment does not rule out the possibility of tuberculosis.

#### TREATMENT

In effusions of unknown origin, whenever there is the least symptom pointing to tuberculosis, the patient should be treated as tuberculous, even if no pulmonary disease can



be found upon expert physical and roentgenologic exploration. These patients should be kept under close observation and periodically examined for pulmonary involvement. The physician will not always be able to find evidence of pulmonary tuberculosis, but if the patient complains of nervousness, fatigue, loss of weight or appetite, or other symptoms of early phthisis, he should be treated as if he had the disease. When the effusion follows some other disease, the patient should be carefully watched for signs or symptoms of tuberculosis for several years.

There is a difference of opinion among phthisiologists as to the advisability of aspiration in the treatment of pleural effusions. If the effusion is small and produces few symptoms, the withdrawal of the fluid is certainly not indicated. Under these circumstances, the patient should be kept in bed for some weeks after he is free from fever, and it will be noted that the fluid will be absorbed in the great majority of cases.

When the amount of fluid is large and the patient is uneasy and dyspneic, it is best to aspirate. Even in these cases the fluid will at times disappear of its own accord if the patient is left alone. But to render the patient more comfortable and also to hasten absorption, some of the fluid should be withdrawn. In some, the fluid will reaccumulate necessitating frequent paracenteses, but in a good many the remaining fluid will gradually disappear in from six to eight weeks. No set rule can be laid down for aspirations; each patient should be treated individually.

The best time to aspirate is after the acute stage has passed. When aspiration must be repeated, it is best to wait for an interval of a week or two. Sometimes the temperature is increased for a few days after the tapping.

The amount of fluid to be withdrawn depends upon how much is present in the chest at that time. Usually from 500 to 1000 c.c. is the quantity taken out at one time and this should rarely exceed 1000 c.c. Violent coughing may be induced when too large a quantity is removed at one sitting. If the condition is of short duration, a greater amount can be aspirated than if it is of long standing. In these chronic cases the lung will not so readily respond to its former position.

When there is definite pulmonary disease, the healing effect of the compression of the lung by the fluid must be considered. This is especially true in acute miliary tuberculosis. In these cases, the physician should not be too eager to remove the fluid.

At the U. S. Marine Hospital, Fort Stanton, N. M., it is the custom with pleural ef-

fusions complicating a pulmonary tuberculosis, to induce a pneumothorax to replace the fluid that has been aspirated. In cases where there is no contraindication, the artificial pneumothorax treatment is continued. Thus the lung is kept at the rest indicated by nature when it caused the fluid to form. It has been noticed, in some instances, that the fluid does not reaccumulate after the substitution of air. In the others, the presence of the serous fluid is not more harmful than the usual effusions complicating pneumothorax therapy. It is best to make the first induced pneumothorax the final step of the aspiration operation, as it is possible for adhesions to form if it is postponed to a subsequent date.

#### PROGNOSIS

Pulmonary tuberculosis beginning with a pleurisy, with or without an effusion, seems to do better than other types of the disease. This is especially true of those developing their pulmonary pathology more or less shortly after the primary pleurisy. It may not apply in those where there is an interval of several years between the two conditions. Fishberg<sup>1</sup> states: "Acute progressive phthisis following primary pleurisy is extremely rare, excepting in acute miliary tuberculosis, or in acute pneumonic phthisis which, in rare instances, is accompanied, or masked, by a pleural effusion." Bonney<sup>2</sup> says: "The type of pulmonary tuberculosis characterized by initial pleural involvement is generally conceded to be one of the most benign forms of the disease."

During the last few months, two hundred patients have been interviewed at the U. S. Marine Hospital, Fort Stanton, N. M., and their histories gone over, as to whether or not they have had a pleural effusion. This group of patients has been under treatment for a period of from three months to several years, the longest stay being nineteen years for one patient. An attempt was made in every case to determine if the pleural disease was primary or secondary to the pulmonary tuberculosis. A history of pleural effusion was obtained in twenty-nine cases (14.5 per cent). The correct percentage would probably be higher, as small effusions may occasionally pass unnoticed. The roentgenograms of the chests of all these patients have been carefully studied. Every picture taken in every case was examined especially for the presence of an effusion and for the type and extent of the pulmonary tuberculosis. It is a rule in this institution to have chest films made at intervals of approximately six months, on each patient.

Accurate records of the side affected could be ascertained in only twenty-five of

the twenty-nine cases. It was on the right side in ten and on the left in thirteen, and bilateral in two, but not on both sides at the same time.

Nineteen of the twenty-nine cases were aspirated. This was repeated several times in most of them. In many the fluid was finally absorbed or did not reaccumulate following paracentesis. One patient had eleven aspirations over a period of several years and still has a pleural effusion at the present time. It is not causing him any discomfort and he is able to work fairly hard and is considered to be in fairly good health. In six who have never been aspirated, the fluid disappeared in four; the other two are of recent occurrence.

It was difficult to state exactly, in some cases, whether the effusion or the lung involvement was primary. With the best history obtainable it was thought that the pleural effusion occurred first in seventeen of the twenty-nine cases.

From the standpoint of the roentgenologist it was noted that in patients with pleural effusions, and especially those in whom this was an initial manifestation, the pulmonary lesions were more consistently localized to the apices than in a similar group of other patients. The examination of a series of chest films of the same individuals gave the impression that the pulmonary pathology of patients with effusions progressed more favorably and improvement was more rapid. This is particularly marked in those who cooperate in their treatment. The explanation in part may be that the disease is detected earlier in this type of case. Still it seems that some immunity may also be derived from the pleural effusion.

In the review of the films of the patients giving a history of pleural effusion, it was noticed that many of them showed evidence of an interlobar pleurisy on the same side as that of the fluid. This may be due to the deposit of an exudate in the interlobar space.

To test the prognosis further, the erythrocyte sedimentation records of all the patients were examined. This test is done on practically all patients in this hospital and it is repeated at frequent intervals. It has been found reliable in indicating the activity of the tuberculous lesions. It is realized that, as a measure of tissue destruction, it will be influenced by other diseases besides tuberculosis; but in patients known to have this disease, it can be considered of great value in estimating their prognosis.

According to the Linzenmeier technic, most healthy individuals will show a sedimentation time of over six hours. For clin-

ical purposes a reading above four and one half hours for men and three and one half hours for women would indicate that little or no tuberculous activity was present in the body.

All of the patients in this study are adult males. Sixteen of the seventeen with primary pleural effusions, mentioned above, have had this test. Thirteen of these sixteen (81.29 per cent) showed a sedimentation time of more than four hours. In nine of them it was over six hours. The remaining three (18.7 per cent) had tests of two hours or less.

Since July, 1929, 266 patients had their erythrocyte sedimentation time recorded once or oftener. Of these, 40 per cent were over four hours: 18 per cent between two and four hours: and 42 per cent less than two hours. It will be noted that the percentage above four hours is less than half of that of the primary effusion group. By going through the files of the erythrocyte sedimentation tests, three groups of sixteen patients each were picked out at random. In these the percentages of those having sedimentations of four hours or better were 25 per cent and 31.2 per cent respectively. None are found to compare favorably with the primary pleurisy group.

In this study it was found that pleural effusions seem to be associated with early types of pulmonary tuberculosis. One of the reasons for this may be that in the chronic far-advanced cases the two pleural surfaces are liable to be adherent. When it does occur in the chronic case it appears to be of no material help in the great majority of the cases and may even prove harmful. That effusions do occur in chronic terminal cases is evident from the necropsy statistics of this hospital. Among the last eighty autopsies, there were six cases showing pleural effusions (7.5 per cent). One of these was bilateral.

#### CONCLUSIONS

(1) Pulmonary tuberculosis preceded by pleurisy or a pleural effusion seems to run a more benign course than the ordinary case.

(2) Small effusions are usually absorbed and should not be aspirated.

(3) Large effusions producing distress should be aspirated.

(4) Aspiration in these cases should be immediately followed by pneumothorax therapy whenever there is demonstrable pulmonary pathology or a positive sputum, and the involvement of the contralateral lung is not prohibitive.

#### REFERENCES

- (1) Fishberg: *Pulmonary Tuberculosis*, 1922, p. 516.
- (2) Bonney: *Pulmonary Tuberculosis and Its Complications*, 1908, p. 351.



## METHODS OF REST FOR THE WORSE LUNG—POSTURAL REST AND ARTIFICIAL PNEUMOTHORAX

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(Read before the Staff Meeting of the Good Samaritan Hospital, Phoenix, Oct. 27, 1930).

Tuberculosis, attacking the human lungs, follows a fairly definite course. It begins on one side: sooner or later the opposite lung is involved, more or less than the first. But at some time in the course of the chronic case there is usually a period when the active disease is nearly all in one lung, and it may remain so for a long time.

Rest is the treatment for tuberculosis. When the disease resides mostly in one lung, there is obvious advantage in affording intensive rest to that lung. The method of so doing has to be decided after careful study of the individual. There are no set rules to make such a decision easy, but certain broad principles apply to it.

The safest, the slowest and the least radical way of favoring one lung is by postural rest. This procedure, introduced by Webb and Forster, requires that the patient be in bed. A small firm pillow, reaching from axilla to rib margin, is placed under the worse side, and the patient lies on it, in the lateral posture. The pillow splints the ribs and decreases their motion. This postural rest on the worse side is gradually increased from a few hours to twenty hours a day. The heart and mediastinum are displaced to the affected side, and if that lung is in condition to contract they remain so displaced. The diaphragm on that side has at first a wide excursion, but as the lung contracts the motion of this leaf of the diaphragm becomes limited. In a case suitable to this treatment, a symptomatic improvement is seen in two weeks. If, after faithful trial for two months, no benefit is observed from postural rest, the method should be abandoned.

Supplemental to postural rest is the use of the shotbag. This bag, shaped to the chest, is applied over the upper lobe while the patient lies on his back. The weight of shot, two pounds at first, is gradually increased. The shotbag may be used to relieve the patient for an hour or two from his lateral posture; or it may be employed alone, in apical disease of one or of both lungs, with considerable success. It teaches the patient to breathe with the diaphragm.

Postural rest is simple, safe, and inexpensive, and it is helpful in teaching the patient to relax and to really rest. It can be employed even in the presence of some activity in the better lung, and it is often a

useful mode of preparation for collapse therapy. In suitable cases it accomplishes the healing of both lungs, with the advantage that the other mechanical aids are left in reserve for a possible relapse. But postural rest is slow; it does not meet the need in emergency. The patient chosen for posture must have resistance to his disease and not too much damage in the worse lung—say no cavity more than an inch in diameter. He must also have patience, persistence, and money enough to live on. Within these limitations postural rest is a definitely useful measure, particularly in doubtful cases pending decision as to more radical treatment.

The most popular and probably the best mechanical treatment for unilateral tuberculosis is artificial pneumothorax. By this operation, unless adhesions prevent, the worse lung may be put at rest to the extent required for healing. The procedure is not difficult, the danger to life is slight, the degree of collapse can be observed and controlled at will. Provided only that the worse lung is not too much bound by adhesions, and that the other lung is sound enough to carry on, pneumothorax is applicable to the disease in all its stages. It is the operation of choice: massive disease, open cavities, progression in the worse lung, and hemorrhage from that lung, add force to the indication for pneumothorax. So does tuberculous disease of the glottis. If spontaneous pneumothorax occurs on the worse side (and if the other side is in fair condition it may be assumed that the worse lung was ruptured) it should be continued by inflations. Similarly, an aspirated effusion should be replaced by air. When postural rest fails to heal the worse side, pneumothorax should be considered. When the patient with one-sided disease must work or starve, his chances are better with pneumothorax.

But pneumothorax cannot always be used for the relief of one-sided tuberculosis. Even with most of the trouble in one lung, the operation should not be done if the better lung shows evidence of an acute process, scattered areas of caseous disease. The chest film is helpful and necessary in revealing the state of the better lung, but it cannot be trusted to predict whether the worse one will collapse: that can be determined only by trial. A lung opaque to the ray may collapse quickly with a high negative intrapleural pressure, while one that looked clear at the edges may admit no air, or its cavities may be held open by adhesions. These are the cases that call for surgical intervention. They are entitled, I think, to a trial of pneumothorax, first.

With collapse accomplished, the disease in the better lung may advance, demanding cessation of the pneumothorax, and it may be harder to get rid of than it was to induce it. Also there is the ancient bugaboo of effusion into the pneumothorax. This occurs often, but it seldom does harm if it is let alone. Everything considered, artificial pneumothorax remains the procedure of choice for properly selected cases of clinically unilateral tuberculosis.

#### DISCUSSION

DR. S. I. BLOOMHARDT: I am happy both Dr. Phillips and Dr. Holmes stressed the fact that there has been a constantly increasing tendency to prescribe longer and more complete rest in the treatment of pulmonary tuberculosis and rest has gradually come to be regarded as the most important single measure in the arrest of the disease. The favorable results thus obtained, I believe, have encouraged the wider application of operative procedures which afford more functional rest than can be obtained by bed rest alone. Thus such measures, I am sure, are designed to supplement, not obviate bed rest when this alone has proved ineffectual in selected cases. So often after a pneumothorax or exsaisis the patient is permitted by the doctor to forget his lesson of postural bed rest.

In the data showing us the value of pneumothorax we are especially indebted to Saugman of Scandinavia and Matson with his associates in this country. From their data it was first possible to compare the results in large series of cases treated by this method with the result in cases not so treated but otherwise similar, and to appreciate there is a distinct advantage to be gained by its use. Of 1,004 cases of pneumothorax in Matson's most recent series, from 1911 to 1926, 32 per cent were clinically well, 20 per cent arrested, 16 per cent unimproved and 32 per cent died, while in cases selected for pneumothorax when pleuritic adhesions prevented the introduction of gas, only 7 per cent made a clinical recovery as a result of sanitarium care alone, and 55 per cent are dead. Nearly all were severe forms of tuberculosis and were subjected to pneumothorax after failure of other methods.

Other statistics of 570 cases of fibrocavous tuberculosis in Naveau's study of Rist's cases: 31 per cent were clinically cured, 17.5 per cent improved, 17.5 per cent stationary and 34 per cent unimproved or dead.

Matson and Bisaillon present their results for comparison and find that, of 423 cases of fibrocavous and fibrocavous cavernous tuberculosis, 32 per cent were clinically cured, 20 per cent arrested, 16 per cent unimproved and 32 per cent died.

They tell us in their experience pneumothorax is limited with application, as in more than half the cases in which it is indicated a satisfactory collapse, upon which a successful treatment largely depends, cannot be obtained because of adhesions. Of cases in which a satisfactory collapse was established, 48 per cent are clinically well, 20 per cent arrested, 11 per cent slightly improved and 21 per cent dead; whereas, in cases with only partial collapse, 13 per cent are clinically well, 13 per cent arrested, 15 per cent slightly improved or unimproved, and 50 per cent dead.

Embolism is the most immediate danger of pneumothorax. In their 12,000 inflations, the "gas embolism shock" occurred 19 times but only 2 cases were fatal. Saigman had only 2 embolic deaths in 11,500 inflations. Tuberculous empyema occurred

in 12 per cent of 480 collapsed cases, but was not a serious complication unless drainage was established.

Intrapleural pneumolysis we would like to have had on the program tonight, as well as the latest status on extrapleural thoracoplasty, but time did not permit and at a future meeting, perhaps, these two phases of chest surgery can be talked about.

Matson's report of 90 cases of phrenicotomy finds the most striking benefit in patients with fibro-caseous cavernous tuberculosis, stationary or slowly progressive, and in good general condition with a good contra-lateral lung. The results in the exudate types were unsatisfactory. He claims it should precede every thoracoplasty. Occasionally so much benefit follows this relatively simple procedure that the more radical measures are unnecessary. It is relatively little value as an independent procedure; it is not wholly without danger from accidents in connection with the surgical procedure; it is a question whether paralysis of the diaphragm may not eventually lead to more or less serious disturbances. Unilateral phrenic paralysis produced by operation displaces thoracic and abdominal organs, as in the anomaly known as eventration of the diaphragm. A majority of patients with eventration suffer from more or less troublesome symptoms due to the displacement of the viscera and it is desirable to know whether or not similar disturbances are to be expected after operative paralysis of the diaphragm.

#### RELAPSING FEVER

(Febris Recurrens, Ruckfallfieber, Spirillum Fever, Tick Fever).

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(Abstract of a paper presented before the Maricopa County Medical Society.)

#### DEFINITION

Relapsing fever is an acute infectious disease characterized by recurrent attacks of fever which are usually separated by afebrile and otherwise symptomless intervals. It is caused by several varieties of spirochetes which are transmitted to man from ticks and lice.

#### HISTORY

1741—Rutty in Dublin observed the disease associated with typhus fever. 1857—Livingston in South Africa reported it following bite of tick. 1868—Obermeyer reported large spirillum present in blood. 1872—Spirillum confirmed in a German epidemic. 1904—African tick fever proved due to spirochete.

#### INCIDENCE

I.—Chief centers of distribution, for louse-borne type: European Russia; Poland; Balkan States. Occasionally epidemics. 12,000 cases in Serbia during World War.

Mild epidemics occasionally occur in: China, India, North and West Africa. 600 cases in Gold Colony of West Africa in 1922 and 1923.

During 17th and 18th centuries epidemics occurred in: Ireland, Scotland, Aus-



tria-Hungary, Germany, Russia. (1869 imported from Ireland to New York and Philadelphia but short-lived.)

- II. Chief center of distribution for tick-borne type: German East Africa. Spreads along main caravan routes, especially in: Uganda, Congo Free States, British Central Africa, Portuguese West Africa. Endemic in: Palestine, Persia, parts of Central and South America. Sporadic cases occur in: Mexico, Southern California. Only one case reported to State Board of Health in Arizona.

#### ETIOLOGY

Due to spirochete of the genus *spiro-nema*. (Differently named in different parts of the world but morphologically showing no constant differences.)

*Spiro-nema recurrentis* (Lebert, 1874). Length 18-23 micra. Breadth about 0.3 micron. 3-6 turns.

Incubation period (7 to 12 days). About one week for it to appear in blood after gaining entrance. Disappear and reappear at weekly intervals several times. Mode of transmission: By crushing louse on skin *spiro-nema* enters through abrasions. By secretion from tick. By carriers (flies, mosquitoes, or bedbugs) from patients.

#### MORBID ANATOMY

No characteristic postmortem findings. May find *spiro-nema* in spleen and bone-marrow.

#### DIAGNOSIS

Find causative organism in blood during paroxysm. (Dark field or Wright's stain).

#### Differential:

Malaria, Malta Fever, Typhus Fever, Dengue, Smallpox, Trench Fever, Infectious Jaundice, Yellow Fever, Typhoid Fever, Influenza, Pneumonia.

#### PROGNOSIS

Self-limiting (Succeeding relapses less severe). Usually not fatal except in weak, poorly nourished individuals. 4 per cent fatality in Europe. As high as 30 to 40 per cent in India and Africa. Partial immunity conferred. (May last only 2-3 months).

#### TREATMENT

Arsphenamine intravenously. (0.2 to 0.3 gm. is usually sufficient).

#### REPORT OF CASE

Mr. C. E. M., a white male, 37 years old, previously in good health. On August 8th, after an 18-day vacation spent around Greer, Arizona, reported to his physician with a temperature of 103°, stating that he was "sicker than he had ever been in his life," aching from head to foot, but physical examination otherwise practically negative. His condition was attributed to a "cold," but failed to improve, so that 3 days later, August 11th, his temperature had mounted to 105.5°, but still with negative chest and physical findings. To account

for the high temperature at this stage a consultant favored an intestinal infection. Following medication by mouth along with cold soda enema, tepid sponges and alcohol rubs, his temperature dropped to around 97° where it remained for several days.

Following this, he had repeated attacks of hyperpyrexia (106° at one time) with ensuing subnormal temperature for several days followed by a period when he felt well and able to continue with his business. His attacks of hyperpyrexia associated with general malaise were uncanny in their regularity, usually starting the temperature rise early in the morning, reaching the peak (104 to 106 degrees) that same evening with the consequent "breaking" early the next morning. Altogether, the patient had seven attacks with relapses occurring at intervals of two to thirteen days (August 8, 21, and 28, September 5, 12, 22 and 24).

The blood Wassermann, urinalysis, Widal reactions for typhoid and paratyphoid "A" and "B", the agglutination tests for Malta fever, and the search for malarial parasites, were all negative. On September 13 the white blood count was 13,700, with 69 per cent polynuclears, 17 per cent lymphocytes, 13 per cent monocytes and 1 per cent eosinophiles. The stool examination revealed no parasites, blood, nor tubercle bacilli.

On September 25, during a paroxysm, a blood smear showed the presence of *spiro-nema* in the blood, following which one intravenous injection of 0.6 neo-arsphenamin has given lasting relief.

### URETERAL STONE SIMULATING ACUTE APPENDICITIS

#### (Case Report)

W. O. SWEET, M. D., and  
G. C. FRENCH, M. D.  
Phoenix, Ariz.

(Presented at the Staff Meeting of the Good Samaritan Hospital, Phoenix, Sept. 29, 1930.)

We have all observed cases of acute pyelitis, acute salpingitis, and ureteral stone, with all the cardinal signs and symptoms of acute appendicitis. These cases arouse a great deal of immediate interest in the mind of the diagnostician since the treatment is necessarily quite different. However, when a case is referred to a surgeon with a diagnosis, it is often the rule that no further study is made of the case until the patient is under an anesthetic upon the operating table. Such confidence in your internist without a doubt is seldom misplaced if he has available the various laboratory facilities for confirming the clinical diagnosis. However, if such is not the case, it probably is wiser to do some of the simpler tests, at least before any operative procedure is undertaken. For we are sure it is the general observation that, even with the most complete analysis of a case, at times we are unable to be absolutely positive of the diagnosis; otherwise, the term "exploratory laparotomy, would long since have become obsolete.

Cope mentions a case in which all signs and symptoms, both clinical and laboratory, pointed toward ureteral stone. Even x-ray demonstrated such; however, it was found to be a concretion in the vermiform appendix. Many other similar experiences could be mentioned. If there are any ironclad clinical signs or symptoms which will differentiate between ureteral stone and an appendicitis in all cases, we have, in our experience, been unable to find them.

The case to be reported is not an ideal one, since it is of the type so often met with, in which the finances are so limited that a proper study cannot

be made. There should be some solution to this problem if we expect to do scientific medicine and surgery.

The doctor who referred this case to us stated that this case was to be decided between acute appendicitis and ureteral stone.

Mrs. X came into the hospital at 1:30 a. m. with the following history:

**Chief Complaint:** Sharp, constant pain in right side of abdomen at level of umbilicus, radiating posteriorly upward to right kidney region and down toward right groin. Was constipated. Pain began four days previously with a sudden onset, continued four or five hours. Was given a liquid medicine which relieved pain. Pain was preceded by a frequency of micturition and was associated with nausea and vomiting. Four days later at 1 p. m. she had a recurrence of the pain, frequency of urination, nausea and vomiting. Pain was sharp in character at onset, but suddenly, after several hours, ceased. However, she was sore in right kidney region and over right abdomen at level of umbilicus. She stated that she had had a similar attack six years previously.

**Past History:** Usual diseases of childhood. No other illness except as mentioned above. Married 15 years; 3 living children. One miscarriage, 10 years ago, not induced. Menses normal. Leukorrhea since first child was born, 12 years ago.

**Physical Examination:** Reveals a young adult female lying in recumbent position in bed. She is about 5 feet 6 inches tall and poorly nourished. Skin is moist and warm. Respiration 40, shallow and mostly thoracic. Face shows expression of anxiety. Temperature, 99.4. Blood pressure, 118/80.

**Tongue:** moist, covered with grayish film. Head and neck otherwise negative. Chest: sthenic type; expansion equal on both sides; no breast tumors. Lungs: no abnormal areas of dullness; breath sounds normal; no rales heard. Heart: no enlargement; sounds clear; rate regular and rhythmic; no murmurs heard.

**Abdomen:** Slightly distended and tympanitic. Slight hyperesthesia of skin to the right of umbilicus. No rigidity. Pain and tenderness elicited upon deep pressure over McBurney's point. Slight tenderness over suprapubic area, much tenderness over right kidney, the lower pole of which was palpable. No other points of tenderness.

**Pelvic examination** reveals retroversion of uterus and lacerated cervix. No masses nor points of tenderness.

**Rectal examination,** negative.

**Reflexes** normal.

**White blood count,** 15,200; hemoglobin, 80; polymorphonuclears, 84; small mononuclears, 13; transitional, 3.

**Urinalysis** (catheterized specimen): yellow in color; acid in reaction; specific gravity, 1025; acetone, negative; albumin, negative; sugar, negative. Blood, 3-5.

**X-ray:** reveals two crescent-shaped shadows in right kidney region, about  $\frac{1}{2}$  cm. by  $\frac{1}{4}$  cm., which resemble kidney stones. In urinary bladder there are several oval shadows the size of large peas which also resemble stones. Due to considerable gas in belly, re-examination was suggested.

**Re-examination:** Reveals same bodies in region of right kidney, also an oval-shaped body in right bladder region on a level with the plane passing through the lower portion of first segment of the coccyx.

**Nonprotein-nitrogen,** 30 mg. per 100 c.c. of blood.

**P.S.P. test:** first hour, 10; second hour, 16; total, 26.

**Cystoscopic examination:** bladder normal except for edema of right ureteral orifice. No. 6 catheter ascended to right kidney easily. No. 5 catheter, passed along beside it, was arrested  $1\frac{1}{2}$  cm. within ureter. Catheter left intact for 18 hours.

**Diagnosis:** Ureteral calculus.

Patient was in the hospital 7 days. Temperature ranged from 99.2 to 101.2 until afternoon of fourth day, when it came down to normal and remained so.

**Urinary output** first twenty-four hours, 75 c.c. Intake, 3000 c.c. Output increased daily, but at no time was the relation better than 4530: 2750.

Pain and tenderness of abdomen and right kidney area gradually subsided until she was free from any discomfort upon discharge.

**White blood count** was 8600; hemoglobin, 85; polys, 83; small monos, 17.

No further examination was made of kidney function since patient felt well and desired to go home without further expense.

## DISCUSSION

**DR. H. D. KETCHERSIDE:** Dr. French is to be commended on the masterly way in which this case has been handled. The number of cases with renal calculi that have had their appendices removed without relief of their symptoms, bear mute testimony to the fact that these cases are not always so carefully handled. The problem with which he was confronted is much more difficult than is commonly realized. We shall have to grant that, if given sufficient time, most urological diagnoses can be worked out with an amazing degree of accuracy, but, in these cases which simulate acute appendicitis, time is precious and delay often disastrous.

The signs upon which we are accustomed to rely most, are the location and character of the pain and tenderness and the presence of blood in the urine. We are all looking for the old familiar syndrome of renal colic, severe pain coming on suddenly in the back and radiating down the ureter to the testicle, penis, or inner aspect of the thigh; when, as a matter of fact, that syndrome is seen most often in ureteral calculi, particularly where the stone is lodged low in the ureter, and is not often seen in renal calculi. Pain radiating to the back is not uncommon in acute appendicitis, particularly in retrocecal appendices.

In renal calculi the amount of blood in the urine is, as a rule, not large, and may be found only on microscopic examination and if the symptoms resemble those of appendicitis it is very difficult to differentiate the two. The presence of blood in the urine is not at all rare as the result of systemic infection in appendicitis. It can seldom be explained as due to the proximity of the inflamed appendix to the ureter.

The time has passed when one can make a diagnosis of renal or ureteral calculi from the history alone. The pain, hematuria, pyuria and all the other symptoms, which stand out in the individual clinical pictures, are of great value only in pointing to some condition in the urinary tract. The true nature of the condition can be determined only by a complete urological examination.

Plain radiography, supplemented by the use of the opaque catheter, and ureteropyelography, show the presence of a calculus in about 85 per cent of cases. The use of uroselectan will probably increase the percentage, as it makes possible the taking of pyelograms where it is impossible to pass a catheter up the ureter, and we get our best pyelograms where there is an obstruction in the ureter allowing the opaque medium to concentrate above the point of obstruction.



## PRE-ECLAMPTIC TOXEMIA

### (Case Report)

C. N. PLOUSSARD, M. D.  
Phoenix, Ariz.

(Presented at the Staff Meeting of St. Joseph's Hospital, Phoenix, Oct. 13, 1930).

Patient was sent into the hospital July 28, 1930, by Dr. Fournier, with a diagnosis of pre-eclamptic toxemia and approximately seven and a half months' pregnancy. White adult female, age 39 years. Primipara. Has been married six years.

Family History: Father dead, blood poisoning. Mother dead, tuberculosis. No miscarriages.

Complaint: Patient states her feet and ankles began to swell one week ago. Much indigestion and gas on stomach. No vomiting. Soreness in wrists and ankle joints. Small black specks before the eyes at frequent intervals. Pain in the abdomen when lying on the right side. Appetite good. Urination infrequent and scanty, with pain when urinating. Constant headache for the past two days.

Past History: Had an appendectomy ten years ago; adhesions six years ago. Right mammary gland partially removed four years ago for tumor. Menses regular, every 28 days, duration three days, many clots and cramps. Last menses, November 28, 1929.

Physical examination shows an adult white female lying on her back but restless, with eyes open wide. Breath hard to get. Skin is sallow, edematous condition over the whole body, more marked on the feet, hands and eyelids. Neck: carotid pulsations very evident. Chest shows heart sounds increased in intensity. Right breast small due to operation four years ago. Otherwise, chest normal. Abdomen is enlarged from below upwards to four finger breadths below the ensiform. Has three old scars in the midline between the symphysis and the umbilicus. External genitalia normal. Edema of vulvae. Extremities normal except for edema.

July 29: Patient's condition did not change much the first day in the hospital. Blood pressure mounted to 172/100. Profuse perspiration.

July 30: Patient had very restless night. Jumps in bed at the slightest noise. Has constant headache. Never slept at all. Has spots before the eyes constantly. Blood pressure had mounted to 196/115 and patient seemed on the verge of convulsion. Eyes were blinking and extremities jerking. Could hardly talk to her because the voice would make her jerk and jump. She was given 20 c.c. of 10 per cent magnesium sulphate into the vein. Aspirin for headache. Urine showed .125 per cent albumin. Blood: Hemoglobin, 80 per cent; lymphocytes, 23 per cent; polys, 77 per cent.

Because of the fulminating type of toxemia and the absolute failure to respond to the usual medication, rapid delivery by cesarean section was thought the best procedure for both mother and child, the patient being on the verge of a convulsion.

Under sodium amytal, 10 grams into the vein, supplemented with ether, a right paramedian incision eight inches long, between symphysis and umbilicus, was made and the abdomen opened. Uterus was brought into the wound. Intestine was packed away from the uterus and uterus incised. Bleeding was more profuse than usual, probably because of the patient's high blood pressure. Amniotic sac was opened and a baby girl weighing 4 pounds and 8 ounces was delivered.

There was injected into the uterine muscle 1 c.c. of pituitrin. The uterus was sutured in three layers and the abdomen closed in layers.

Post-operative report:

First day: Returned from surgery in fair condition; temperature, 98; pulse, 84. Patient very restless. Was given one-fourth grain of morphine sulphate. Pituitrin, 1 c.c. Later, pituitrin repeated because of more than usual amount of bleeding. Caffein sodium benzoate was given. Pulse not rapid but weak.

1st night: Temperature went to 101 4/5; pulse, 110. Patient very restless but with no pain. Much indigestion.

2nd day. Still complaining of indigestion and shortness of breath. Began urinating small amounts frequently. Morning temperature, 99.6; pulse, 96. Afternoon temperature, 101.2; pulse, 100. Patient was given 500 c.c. citrated blood into the vein.

2nd night: Temperature, 101; pulse, 100. Quite restless and nauseated. Stomach lavaged. Given glucose and saline into the vein. Complaining of severe headache and gastric distress and unable to get breath.

Edema still marked over entire body with rales in the chest.

3rd day. Patient's condition worse. Temperature, 98; pulse, 94. Unable to get breath. Patient cyanotic. Given oxygen and stimulation. Alpha-lobelin given, and 500 c.c. more citrated blood into vein. Patient became more restless, more cyanotic. Edema of the entire body, uvula, larynx and lungs. Pulse became rapidly weaker. Generalized edema seemed to change little. Patient died.

Blood pressure readings: Fetal heart rate

4/8/30	120/70	154
4/29/30	110/70	157
5/23/30	98/60	163
7/5/30	120/70	169
7/27/30	152/90	171
7/29/30	172/98	
7/30/30	196/115	176

Total amount of urine for three post-operative days, 300 c.c. Death on the third post-operative day, with practically normal temperature and very little distention, probably due directly to kidney destruction and secondarily to pulmonary edema.

Baby girl is doing nicely.

### DISCUSSION

DR. F. C. JORDAN: Pre-eclamptic toxemia is not uncommon and may occur in patients who have had the best of pre-natal care. By far the largest number of patients who develop pre-eclamptic toxemia have had inadequate and, in many cases, no pre-natal care. Every pregnant woman should see a competent physician early in her pregnancy. Her physician should take careful history, make accurate pelvic measurements, and make a complete physical examination. She should see her physician at least once every three weeks and her blood pressure should be taken; also her urine examined. Some physicians neglect to take the blood pressure of their patients. I am sure this is a serious mistake for, I believe, in many cases, the blood pressure readings will be altered before there are any abnormal urinary findings. The average blood pressure in pregnant women is between 110/70 and 120/80. If the blood pressure should go up to 130/90, the patient should be closely watched. I have seen one case of eclampsia in which the blood pressure had not been over 132/90. High blood pressures alone are not at all serious, but they bear close watching. High blood pressures with only a trace of albumin are not as serious as

those with larger amounts of albumin. The presence of casts and albumin in the urine and high blood pressure always are of serious importance. These patients should be immediately placed in the hospital and be under the constant care of a good obstetrician. Eclampsia occurs in primipara about ten times as frequently as in multipara; also, eclampsia often recurs in subsequent pregnancies.

How shall we treat pre-eclamptic toxemia? Stroganoff's conservative method, which he introduced in 1897 with such a low mortality, has superseded all other forms of treatment. He gave large doses of morphine hypodermically and chloral by rectum, and the patients were kept absolutely quiet in a dark room. In later years, intravenous administration of magnesium sulphate and glucose solutions have seemed to aid materially.

Plasmapheresis was performed eighteen times in fifteen patients in the Boston Lying-In Hospital. In five eclampsias, prompt recovery followed. In five cases of pre-eclamptic toxemia where other methods, including induction of labor, had failed, reduction of blood pressure and disappearance of albuminuria ensued. It was also tried in five chronic nephritides. These cases showed temporary improvement. The following technic was used:

About 1,000 c.c. of blood was withdrawn (depending upon the size of the patient and blood pressure readings.) The blood was mixed with sufficient citrate solution to prevent clotting. The citrated blood was then centrifuged for 20 minutes and the serum siphoned off. Then 500 c.c. of normal saline solution was added to the corpuscles and thoroughly mixed and centrifuged for 20 minutes. The fluid was again siphoned off and 100 c.c. of normal saline was added to the remaining corpuscles. This was re-injected into the vein. The red count showed very little, if any, diminution. It would seem that venesection followed by a transfusion would do equally as well, provided a suitable donor could be secured.

I think this chart should be criticized in that there is only one blood pressure finding recorded. There were notes under the treatment orders that the blood pressure should be taken twice daily but no records were charted. The only recorded pressure, of 105/115, was made on the second day in the hospital. All obstetric patients should have their blood pressures taken and recorded on the day of entrance. No doubt this was taken but it was not recorded.

Summary: Adequate pre-natal care will prevent many of these pre-eclamptic toxemias. If they do occur, the patient should be placed in a well-equipped hospital and given conservative treatment as is indicated in the individual case. Personally, I favor salines for thorough gastro-intestinal evacuation; large amounts of glucose, intravenously; luminal sodium as a sedative. In some cases, there may be such extensive damage to the liver and kidneys that recovery is impossible. Fortunately, these cases are not frequent. If these cases can be well treated in the hospital, the mortality rate should be very low.

DR. F. B. SHARP: I want to add a word of consolation to Dr. Ploussard, as these pre-eclamptic toxemia cases are mighty hard to help. Drainage of the kidney is not going to do these patients much good. I can, perhaps, offer a suggestion or two that would not be a criticism. I notice the question of some ether at the operation; the general anesthesia is noticed to increase substances in the blood stream that are present in eclampsia; however, the fulminating type is often fatal, as it

comes up so rapidly. This just teaches us a whole-hearted respect for the pregnant woman and the difficulties we are likely to meet.

DR. PLOUSSARD: This patient was admitted to the hospital late on the 28th, there wasn't much time. We gave her intravenous magnesium sulphate with practically no result. The blood pressures which you see on the chart were on our records at the office and I copied them from there. I found nothing that would come near quieting her. At the sound of a door or a voice outside, she would blink her eyes, and one would think she was on the verge of a convulsion any minute.

DR. J. D. HAMER: There were sixteen cases in the Good Samaritan Hospital during the month of April who came in with pre-eclampsia. We used magnesium sulphate in nearly every one of them. I think the trouble with cases of that sort is that we don't use enough of it, or use it frequently enough. One case came up very quickly and was in a convulsion when she came into the hospital. We did not hesitate to give, every hour, an ampule of 50 per cent and sometimes two ampules of 50 per cent. Not only that, but the beauty of magnesium sulphate is manifested in another way—that it is a good diuretic as well as working on the bowels.

The serious cases, who were given frequent and constant magnesium sulphate, it seems were those who got the better results. There were sixteen cases of convulsions and a number of cases of threatening pre-eclampsia during this one month. We took blood pressures every three or four to six hours, depending upon the severity of the case, and when it had reached what we thought was the maximum, we shot an ampule of magnesium sulphate and an hour later would notice a difference in the blood pressure.

## TRAUMATIC TETANUS (Case Report)

THOMAS W. WOODMAN, M. D.  
Phoenix, Ariz.

(Presented at the Staff Meeting of St. Joseph's Hospital, Phoenix, Sept. 15, 1930).

The staff are entirely familiar with the symptoms and progress of a tetanus case, but I have felt that this particular case is worthy of presentation due to the fact that the patient had the antitetanic serum in the usual 1500-unit prophylactic dosage and subsequently developed tetanus. This is rather uncommon and for this reason I feel that we may learn considerable from this one case.

This young man, B. A., entered the hospital on July 27, 1930, at about 9 p. m. He had been in an automobile accident in which his car had overturned into an irrigation ditch. He had a dislocation of the left shoulder with a fracture of the humerus, and a very severe laceration of the right hand, together with compound fracture of the middle and fourth metacarpals. The laceration of the hand extended across the palmar surface and also across the dorsum without severance of the tendons. There was little bleeding and the wound was very dirty.

The dislocated humerus was reduced under gas anesthesia and the hand was cleansed as thoroughly as possible with alcohol, ether and iodine. Interrupted dermal sutures were inserted and through and through drainage established. At that time, within about 1½ hours of the time of the accident, 1500 units of antitetanic serum was given. The hand was then placed in a continuous warm Epsom salt bath.



It is interesting to note that at 4 a. m. of the night of admission this boy's temperature was 103.6. The following day the middle finger of the injured hand appeared quite dark, but it was still hoped that some blood supply might be established. The finger had to be removed, however, on the 31st of July. The temperature promptly subsided to a maximum of 100 and by August 8th the wound was quite clean.

When I saw the boy on the morning of August 8th, he was complaining of some stiffness of the jaw muscles, which was the first symptom complained of. He was promptly given 50,000 units of anti-tetanic serum intramuscularly. By evening his condition seemed to be markedly improved. The following morning there was considerable rigidity with spasm of the diaphragm and laryngeal muscles, and, under ether anesthesia, 50,000 units of antitetanic serum was given intraspinally after withdrawal of some spinal fluid. The temperature rose to 101.8 and, due to the fact that there was very marked rigidity and extreme pain, sodium amytal was given at 7 p. m. Relaxation was immediate. He awakened from the sodium amytal at about 10 but shortly thereafter became cyanotic and died at 12:30 a. m.

There are two outstanding features in the case that are suggestive. The first one is that the rapid rise in temperature such a short time after the accident certainly meant a most virulent type of infection. The second is that the usual prodromal symptoms of tetanus were not complained of.

The incubation period in this case was twelve days, while the usual incubation period in tetanus is from four to ten days, although it may be considerably longer. It is an established fact that, in the cases that do develop tetanus even though they have had prophylactic serum, the incubation period is frequently prolonged. Frequently tetanus is insidious in its onset and the prodromal symptoms are overlooked, yet it is of the utmost importance to make the earliest possible diagnosis, for there is little chance of recovery if the diagnosis is made after the tetano-toxin has combined with the nerve cells.

The prodromal subjective manifestations are a slight feeling of tension or contraction, especially in the region of the wound, slight difficulty or pain on swallowing, cramp-like pain in the muscles, especially near the wound. One important feature is that these cramp like pains will arise particularly when the patient is startled by some noise. The early objective manifestations are twitching of the muscles in the region of the wound, a tendency toward sweating, restlessness, anxious expression of the face, and a slight increase in pulse rate. These symptoms may last for several days before the acute toxic symptoms appear and, generally, progressively increase with the toxemia. The locking of the jaw may occur early or late in the disease.

I am not going to go further into the symptom complex for I feel that all are familiar with the picture. It should be emphasized that the search for the early symptoms listed above is of the utmost importance if we expect to see these cases recover, for the early administration of antitetanic serum in massive doses is our one and only hope.

Sodium amytal given in relaxing doses of 3 to 4 grains is of considerable value.

It has been demonstrated that the immunity following the injection of antitetanic serum lasts about seven days, and that the absorption of tetanus toxin is much more rapid than the absorption of antitoxin; e. g., if the serum and the toxin

are injected simultaneously at different points, The toxin which is not neutralized causes mild local tetanus, which is almost always curable.

As undoubtedly occurred in the case I am citing, the immunity was temporary. The spores, inhibited by phagocytes and by the serum, again developed, producing the toxin, which poisoned this boy at a time when no antitoxin was present to neutralize the toxin.

I feel that some of these deaths could be prevented if we would give a second dose of prophylactic serum three to five days after the initial dose, particularly in the cases presenting extremely dirty wounds at the time of admission to the hospital.

## SUBPHRENIC ABSCESS

### (Case Report)

F. J. MILLOY, M. D.  
Phoenix, Arizona

(Presented at the Staff Meeting of St. Joseph's Hospital, Phoenix, Sept. 15, 1930).

Case No. 20262, male, age 41, entered hospital June 28th, last. Could give no history except that he had not been feeling well for four or five days. He stated that he had never been sick in his life before. He had no pain, his appetite was very poor, although he had not vomited before entering the hospital. At the time of entrance, his temperature was 99.6; pulse, 116; respirations, 30. White blood count was 31,950; polynuclears, 90 per cent. The day following admission, patient's temperature was down to 96.6, but that night rose to 104. His blood culture, Malta fever agglutination and Widal were all negative and stools contained no parasites nor occult blood. After the third day in the hospital, temperature ranged between 96.6 and 101, and was below normal more of the time than it was above normal. Pulse ranged from 70 to 120 and respirations from 20 to 40. On July 3rd, the white count was still 31,000 and as yet there were no localizing symptoms. By the 5th of July, the liver was definitely palpable below the right costal margin. It was firm, smooth, and no evidence of pain or tenderness was present. A soft fluctuating mass about the size of half a grapefruit appeared just below the ensiform. This was not tender either. Up to this time the patient had slept well at night, complained of no pain whatever, but was practically unable to eat. The diagnosis at this time was abscess of the liver. The patient was given one-half grain emetine hypodermically. On July 6th, the white count was 25,500; icteric index, 15. X-ray at this time showed stomach normal and evidence of a mass anterior to it. Also, right chest almost filled with fluid with a small amount of air present. On July 7th, white count was 42,000. On July 9th, it was 22,000. At this time the liver border was at the umbilicus. Patient had been receiving emetine every day and seemed to be feeling better and, as the white count had dropped to 22,000, his condition seemed improved. On July 10th, the white count had jumped to 34,000 again, so, on the morning of July 11th, an exploration needle was introduced into the ninth interspace, needle pointing slightly upward. A bloody fluid was withdrawn, all of this fluid was aspirated with the suction. This fluid later coagulated. The needle was brought out and re-introduced, pointing downward, and a cavity was entered and very thick pus withdrawn. Needle was left in position and pus continued to drip through it. An incision

was made immediately below through the chest wall and diaphragm and a large subphrenic abscess was opened and about a quart of pus drained away. Two large garden-hose drainage tubes were introduced through wound near each end. Sutures were tied and wound closed. Drainage continued very profusely following operation. Patient's condition seemed quite satisfactory, took large amount of fluid by mouth. The following day, patient's pulse began to rise and was rather weak and thready and he was in a cold perspiration. He was given 500 c.c. of blood intravenously. His temperature began to rise and was 108 by axilla just before he died at 7 p. m.

The following are the autopsy findings: When attempting to embalm the body and when trocar was passed into the liver area, a large amount of thick pus was encountered which would not come through the aspirating trocar, necessitating an incision into this area for embalming sufficiently well to ship the body. Examination of this area revealed a bulging mass in the epigastrium, which was found to be a large, well-defined abscess cavity with necrosis of the abdominal wall clear up to the skin. Examination of the surface of the liver revealed a liver abscess about the size of the fist with much necrosis and inflammation of the liver tissue. This was just medial to the gallbladder. Examination of the subdiaphragmatic area revealed a large extensive abscess in this area. Examination of the right thorax revealed the hydrothorax containing a large amount of straw-colored fluid. The appendix was bound down by adhesions, showed subacute inflammation which, with the history of the case, was no doubt responsible for his subdiaphragmatic abscess, liver abscess and hydrothorax condition.

### DIAGNOSIS

Appendicitis, subacute  
Liver Abscess, subdiaphragmatic.

### DISCUSSION

DR. R. J. STROUD:—In taking up the discussion of the case in question, the first definite sign of localization was in the fact of a liver swelling—this after Malta fever and typhoid fever had been ruled out. Also an independent swelling was found in a soft fluctuating mass the size of half a grapefruit, below the ensiform.

The fact that these places were not tender and that the patient did not complain of pain was rather deceiving, for it is usual to have pain with pus under pressure, and most certainly it is usual with appendix troubles. I have seen a case of ruptured appendix where all of the pain and tenderness were around the kidney, or at the gallbladder region. Just why this case showed no tenderness or referred pain is hard to tell.

The white count fluctuated but was always high, the signs definitely pointing to a liver abscess and confirmed by exploratory needle; operation to relieve patient of pus. The operation that was done, however, did not alleviate, for there were other foci or abscesses which were still present and which evidently killed because of the added shock of the operation.

It is rather axiomatic, as Cabot says, to look for one cause of a trouble. In this case there probably was one cause but its effect was to make multiple abscesses instead of one. The pathologist did not state whether there was any connection between the liver abscess and the subdiaphragmatic abscess. Very often in these cases there is a connection where the liver abscess has broken through the

posterior abdominal cavity and forms this second abscess. It is not usual in a condition of this kind for a patient to recover, as there may be very few symptoms in one of these abscesses below the diaphragm and in the lesser peritoneal cavity, for the space is large and there can be a great quantity of pus present before pressure gives any indication of the enormous amount of pathology which may be in this region.

The causes of subdiaphragmatic abscesses, or abscesses in the lesser peritoneal cavity, are hematogenous infection from infection of the gallbladder, tonsils, sinuses, appendix, pericardium, or other focus. They are also due to the rupture of a liver abscess, rupture of the posterior surface of the gallbladder, rupture through from above of an empyema, rupture of an abscess of the pancreas head or an abscess around and about the kidney. It does not definitely state whether this abscess lies in the lesser peritoneal cavity and suggests that it is just below the abdominal wall up to the skin and it could have been contained in the epigastrium in front of the stomach and between the liver and the costal margin of the left side.

The differentiation between these various abscesses is very difficult. When the pancreas ruptures and pus gathers in the cavity for this reason, it generally follows along toward the left side and the diagnostic sign in this case is a pain over the left kidney, with tenderness going down toward the left thigh, whereas in a rupture of a liver abscess this same pain is very seldom present, as was the case in this instance. In a rupture of the gallbladder posteriorly, great pain from the empyema is first felt and then suddenly there is an alleviation of the symptoms, with a return when the cavity behind fills up. In these cases tenderness has thrown a wall of adhesions to keep the pus from entering the large abdominal cavity. The dome of the liver must have been high, but the amount of fluid in the right chest probably obscured this sign. The lesion evidently causing most of the symptoms was the subdiaphragmatic abscess.

The causes of liver abscess are as follows: Dysentery—this may be a completely latent disease, even if our improved technic often finds the ameba present. Negative stools in this case probably denoted no ameba but could not be entirely ruled out before the autopsy. The second great cause, and the most general cause in temperate climates, is appendicitis with abscess formation, even if the abscess be relatively small. In these cases there may be an ascending thrombosis and a preliminary pyelophlebitis or infection may occur through the retrocecal tissues—there is also the possibility through the lymphatic channels. The most common route, however, is by the portal vein, although the hepatic artery may carry the infection. Latent appendicitis, as in this case, is a cause, although much less frequent than when symptoms are present. Gastric and duodenal ulcers; typhoid and tuberculosis ulceration; infections of the gastro-intestinal tract, including hemorrhoids and rectal carcinoma, are other causes. Gastric and duodenal abscesses may be a cause by direct perforation. Infection may originate in diseases of the pelvic organs, the spleen or the pancreas.

The causative organs are the usual pyogenic bacteria and especially *B. coli* and *B. pyocyaneus*. Abscess also may be contiguous from infection of the gallbladder or bile passages.

The case is much worth while from the viewpoint that a double abscess was present.



## AN UNUSUAL CASE OF "VISCERAL CRISIS."

(Case 13302, Cabot Case Records, Boston M. & S. Jour., July 28, 1927.)

### CASE HISTORY

A woman of thirty was brought to the Emergency Ward August 30. She stayed overnight in the ward. She had some fever. Next morning she was sent to the Out-Patient Department with a diagnosis of visceral crisis.

The only history was obtained in the Nerve Room. For four years she had had shooting pains in her legs at times. For a year she had had periodic attacks of vomiting lasting two weeks. During the year she had lost thirty pounds. Her feet and hands were numb. The day before admission she had difficulty in speech, was unable to say what she wanted to. There had been no sphincter disturbance. Examination showed tremor of the lips at times.

She gave a past history of scarlet fever and frequent sore throats. She had had marked scoliosis since a fall in childhood. She was sent that day to the wards. Clinical examination showed a much emaciated woman, semistuporous, but becoming quite violent when irritated. She was mentally confused and her speech was incoherent. The skin was dry and hot. There was a suggestion of right facial paresis. The spine showed marked left upper dorsal and left lumbar scoliosis with accompanying chest deformity. The left chest was flattened. The scapulae were angel-wing, more marked on the right. The lungs were clear and resonant. The apex impulse of the heart was felt in the fifth interspace 6 centimeters from the left of midsternum. The heart showed occasional extrasystoles and a loud rough middiastolic murmur over the apical area. Blood pressure 128/85. There was rather marked rigidity of the joints of the extremities. Right pupil smaller than left. Both dilated and slightly irregular. Right reacted sluggishly to light, left not at all. Accommodation not tested. Fundi normal. Biceps and triceps reflexes not well elicited owing to the patient's condition. Pronators normal and equal. Knee-jerks and ankle-jerks absent both in the ward and in the Emergency Ward. No true Babinski, although there was a suggestion in the left foot, and no true Romberg, although there was some swaying in the Emergency Ward.

Amount of urine not recorded, cloudy at all of three examinations, specific gravity 1.015 to 1.020. A catheter specimen showed diacetic acid, much acetone, sediment 2 to 5 leucocytes and 20 to 30 red blood cells per high power field. Culture from this specimen showed a slight growth of colon-like bacilli. Blood normal except for 84 per cent polynuclears. Blood Wassermann negative.

A lumbar puncture in the Emergency Ward showed initial pressure 260, dynamics normal, fluid clear and colorless, ammonium sulphate strongly positive, alcohol positive, Wassermann negative, 72 cells, total protein 110, goldsol 0123211000.

Temperature 99° to 104°, rectal; pulse 87 to 160, respirations 20 to 40.

A medical consultant could find no pathology outside the spine. September 1 another lumbar puncture was done. The canal was entered between the fourth and fifth lumbar vertebrae. 25 cubic centimeters of clear colorless fluid was removed, initial pressure 275, dynamics normal, 15 cells, alcohol and ammonium sulphate positive, total protein 190, goldsol 1233320000, Wassermann strongly positive, sugar 41, chlorides 644. No tubercle bacilli found in sediment.

September 2 a firm rounded mass somewhat larger than a golf ball was felt in the abdomen just to the left of the umbilicus, freely movable upward, not connected with the bladder. The neck was slightly stiff. September 6 a third lumbar puncture gave

40 cubic centimeters of clear fluid, initial pressure 400, dynamics normal, 138 cells, alcohol and ammonium sulphate positive, total protein 138, goldsol 0123434110. Wassermann strongly positive; sugar not done, chloride 605, culture no growth. September 8 the patient died.

### Discussion by Dr. A. C. Kingsley, Phoenix.

This "unusual case" of visceral crisis would seem to me to be rather typical until the day preceding her admission; at which time she had difficulty in speech and her illness entered its terminal stage. The shooting pains, periodical attacks of vomiting, numbness in hands and feet, pupillary disturbance, absence of reflexes, are characteristic symptoms of *tabes dorsalis*.

The history of scarlet fever and frequent sore throat is somewhat confusing. This, in connection with the mid-diastolic murmur at the apex, would suggest a possible heart lesion. However, she has never had any of the more characteristic symptoms of a serious lesion of the heart valves; consequently, I will take the medical consultant's statement that there is no pathology outside of the spine. Sore throat may have been the result of her luetic infection.

We now come to the day preceding her admission to the hospital, on which there was a marked change for the worse in her condition. She was semi-stuporous, confused, incoherent and violent if disturbed or irritated. This suggested definite cerebral involvement. The right facial paresis with the other localizing symptoms would attract us to the localized area at the base, where the seventh nerve might be independently involved.

The urinary examination is not of particular interest, except the leukocytes and 20-30 blood cells with a positive colon-like growth on culture. It is possible that a colon infection of the kidneys might have accounted for some of the temperature.

Some explanation must be given for the mid-diastolic murmur; and admitting I am somewhat hazy on this point, I think perhaps it might result from a syphilitic aortitis.

Her first spinal fluid examination is fairly typical of *tabes*. The second and third indicate that there has been some change in the condition. The Wassermann is strongly positive. The protein is increased. The goldsol is more indicative of inflammatory process. The sugar and chlorides are reduced. The pressure was also increased. There was also some stiffness in the neck at the last examination.

I have no diagnosis for the small movable mass in the abdomen.

### Differential Diagnosis:

Tuberculous meningitis. No bacilli were found; the fluid would be somewhat turbid; the sugar is low and the chlorides are markedly reduced.

Cerebral hemorrhage is possible, though the age of the patient and absence of evidence of vascular disease makes this improbable.

Cerebral embolism. If we knew more about the temperature, whether or not it was septic in character, we might give more thought to this condition. I doubt the presence of a septic endocarditis, which would be the natural source of an embolus.

Cerebral thrombosis with areas of softening. We have in this case, evidence of cerebral irritation as well as some focal signs. This condition is quite common in the early stages of syphilitic infection and mainly in persons under forty years of age.

Acute syphilitic meningitis. We have in this case positive evidence of syphilitic infection. The mental symptoms are those of an irritative lesion of the cerebrum; also some localized focal symptoms; some rigidity in the neck; the spinal fluid cell count is rather high for *tabes*. The colloidal gold is atypical, indicating a low grade inflammatory process.

There is a slight reduction in the sugar and chlorides. The protein is also moderately increased.

I believe therefore, the picture fits very closely from the clinical standpoint and an examination of spinal fluid—

*Tabes dorsalis*; the terminal stage of an acute syphilitic meningitis, with disseminated area of thrombosis in the cerebrum.

#### Discussion by Dr. T. T. Clohessy, Phoenix.

Our informant states that this woman had a visceral crisis, the "visceral crisis" in quotation marks. Visceral crisis means *tabes dorsalis* and *tabes dorsalis* means syphilis. The diagnosis of *tabes dorsalis* is stated by Osler to be justifiable if we find absence of ankle and knee jerks with one other sign, such as Argyll Robertson pupil. We have those three signs and many others to confirm them, such as four years of shooting pains in the legs at times; a year of periodic vomiting, each attack lasting two weeks; some numbness of hands and feet. At present pupils are unequal, dilated and irregular. This array of signs, significant in themselves, are reinforced by the spinal fluid examination, with all tests positive at first withdrawal except Wassermann. At the second lumbar puncture the Wassermann was strongly positive, which might have been the result of a provocative dose of arsphenamine. The number of cells was increased from 72 at first puncture to 136 at the third; this increase of cells, delayed in their appearance because of impermeability (relative) of the nervous tissues, is characteristic of the delayed meningeal Herxheimer or therapeutic shock, and tends to confirm me in my opinion that this woman has had some arsphenamine. The goldsol curve, high in the middle, also rises in height with each puncture, which is also characteristic of the Herxheimer reaction. So we must conclude that this woman without doubt has had a progressive *tabes* during the past four years at least. But patients do not die as a rule of *tabes* per se, although death does at times occur from emaciation and exhaustion in gastric crises, with repeated and long continued vomiting. The diastolic murmur I would attribute to syphilitic aortitis. The urinalysis is not complete but points to an infective nephritis. The acetone we may attribute to the long continued vomiting with restriction of nourishment. The golf ball in the abdomen could be a pyloric or prepyloric syphilid, or a carcinoma. It is most likely a syphilid, as she is rather young for carcinoma, and, at any rate, there is not enough data to diagnose carcinoma. In fact, I consider the data rather incomplete for a definite diagnosis aside from the *tabes dorsalis*. However, I will venture, in addition, a diagnosis of pyloric or prepyloric syphiloma and acute infectious nephritis.

#### Discussion in part, by Dr. Clyde Marshall, (Massachusetts General Hospital, v. *ibid.*)

Everything in the physical examination would be consistent, probably, with neurosyphilis, not necessarily with *tabes*. She is stuporous and confused, which suggests that we may be dealing with taboparesis.

The goldsol is the first suggestion that all is not well with the diagnosis of neurosyphilis. The spinal fluid as given is not consistent with paresis. It is consistent with *tabes* or syphilis of meningovascular type. But to make a diagnosis of paresis we must have the whole five of the spinal fluid tests positive. We have, with an increased cell count, increased protein, a positive Wassermann, a paretic gold curve, and a globular ring. It is practically invariable, I think, that unless we

have these five, we are unable to make a diagnosis of paresis. So that we shall have to look elsewhere for her condition of stupor and confusion.

Has she a meningovascular syphilis? The spinal fluid is consistent. The negative Wassermann does not trouble us much, but she is not likely to be comatose with only seventy-two cells.

In the second lumbar puncture the additional data of sugar and chlorides throws an entirely different light on the situation. It is still inconsistent with paresis, and also with syphilitic meningitis with coma, as we have only fifteen cells. The sugar is low, 41 milligrams per 100 cubic centimeters, and that can mean only one type of condition,—meningitis. It rules out other infections of the nervous system such as poliomyelitis, encephalitis, brain abscess or sinus thrombosis. All these would have a normal or high sugar. The chlorides are also low. Normal spinal fluid chloride is 720 to 750 milligrams NaCl per 100 cubic centimeters. Low chloride occurs chiefly in meningitis. It can occur in poliomyelitis, which however does not come up here, and could be otherwise ruled out by the sugar. So these two findings point toward the diagnosis of meningitis of some sort, of which no previous indications are given in the history. It is true she has had some "rigidity of the joints of the extremities." It does not mention particularly a Kernig or head retraction. But nevertheless a spinal fluid such as stated could mean meningitis of some sort and nothing else. It however leaves doubt as to whether she could have had a previous syphilitic condition.

The findings in the last lumbar puncture were essentially the same as those in the other except that the chlorides have gone lower this time, to 605. They go as low as that with practically nothing except tuberculous meningitis. A chloride of 605 is practically pathognomonic of that condition.

The question of syphilis has to be considered on the clinical history. She had four years of shooting pains in the legs, also of vomiting, which is suggestive of visceral crisis, which diagnosis was made in the wards, I think it is highly probable, although we have no more data than that, to assume that she did have central nervous system lues. The Wassermann in the spinal fluid would suggest it, but in the presence of meningitis, and with a positive blood Wassermann, one is not absolutely safe in saying neurosyphilis; because according to Greenfield, with a meningitis and a positive blood Wassermann, the blood Wassermann may spill over into the spinal fluid and give a positive Wassermann without definite evidence of neurosyphilis. In this case we have only the blood Wassermann report, which is negative. Hence with the meager history we can only say we think she may have it.

I think we can make a diagnosis of tuberculous meningitis, most probably also *tabes*. The question of the heart is hardly within my field. She has a rough middiastolic murmur, with a history of fever and sore throat. Are we entitled to make a diagnosis of mitral stenosis on that?

The question of the golf ball inside the abdomen is entirely beyond me also. From a neurological point of view we would say tuberculous meningitis, probably neurosyphilis, and if so probably of tabetic type.

#### Discussion by Dr. Tracy B. Mallory.

One point that is not brought out very well in the physical examination, it seemed to me, was the woman's extreme emaciation. The circumference of the thigh at its greatest point was only twenty-four centimeters. The arms were so thin that a child



could have encircled them with its fingers. There was also an extreme scoliosis.

The lungs showed a few quite small caseous areas, and also a few older calcified ones. The bronchial glands showed an occasional calcified spot. The heart weighed 200 grams. The measurements of the valves were normal, but the mitral valve showed very definite thickening along the margins, and also some thickening of the chordae tendineae, I think sufficient to give the murmurs recorded in the history, but probably causing no symptoms, and its small size was due to the general extreme emaciation of the patient.

The liver was also very small, weighing only 850 grams. Section of the inferior surface showed numerous miliary pinkish white foci. The kidneys showed one fair sized caseous area four millimeters in diameter. The most important tuberculous focus, other than the acute terminal miliary condition, was a fairly large tuberculous ulcer of the cecum, evidently of quite long duration, as the lymph nodes immediately draining that area showed evidence of involvement of months' to perhaps years' duration.

The meninges showed a very fine sowing with minute tubercles, particularly in the arachnoid over the superior surfaces of the temporal lobes. It was still extremely early meningitis, but there is no question of the diagnosis. The main part of the brain has not been sectioned, so that we have no proof whether there was neurosyphilis or not.

Q. What was the mass in the lower abdomen?

Ans. There was none.

Q. Were there any foci in the vertebrae?

Ans. That was what we naturally guessed, but cross sections of the lumbar vertebrae did not show any old areas there. I think that the scoliosis must have been postural and not tuberculous.

Q. Doesn't tuberculous meningitis give a positive Wassermann?

Ans. I think that the Wassermann is extremely unreliable in any case of meningitis. I have seen it positive a great many times when I did not think there was any evidence of syphilis. Without the best history of syphilis I should certainly discount a positive Wassermann practically entirely in the presence of meningitis.

#### ANATOMIC DIAGNOSIS

1. Primary fatal lesions.
  - Tuberculous meningitis.
  - Tuberculosis of the lungs.
  - Miliary tubercles of liver and kidney.
2. Secondary or terminal lesions.
  - Central necrosis of liver.
  - Tuberculous ulcers of cecum.
3. Historical landmarks.
  - Scoliosis.

### PERSISTENT COUGH OF UNUSUAL ORIGIN

(Case 16182, Cabot Case Records, N. E. Jour. of Med., May 1, 1930.)

#### CASE HISTORY

An Irish watchman sixty-five years old entered the hospital complaining of persistent cough of about six weeks' duration.

He had never known what it was to be sick before the present illness. He had never had any symptoms pointing to chronic pulmonary infection or any dyspnea on exertion. He had had no gastro-intestinal symptoms at all. He was constipated as a rule, but there had been no change in his bowel habits recently. About six weeks before entry he had sudden onset of a cough which lasted

a few minutes at a time. At times he raised a small amount of sticky yellow sputum,—practically an unproductive cough. After a week of this without chills, fever or night sweats he gave up work and rested at home for a week without improvement. He then went back to work for another week, but felt so tired and unrelieved of his cough that he gave up work entirely three weeks before entry. Since that time he had not improved at all but had increasing orthopnea and anorexia and lost ten or fifteen pounds in weight. Three or four nights previous to entry he slept very little, craving the air. He spent much of each night sitting by a window. He had had no pain on the left side of the chest, but a week or two preceding entry the cough became definitely painful, the pain being referred to the lower right chest.

When seen here he proved to be all skin and bones, a little old man sitting upright in bed panting for air. On examination he proved to be cyanotic. His heart was not remarkable in size. There were no significant murmurs. The rate was about 100. The chest signs were interesting. Over the right lower lobe in the back there was diminished tactile fremitus with diminished breath sounds. There was no bronchial breathing, no egophony, no difference between the right and the left chest on inspiration. No peripheral edema, no enlarged liver. Blood pressure 130/70. Some secondary anemia. Leukocyte count 15,000 to 16,000.

He was given one-sixth grain morphia. We tried to keep him as comfortable and as well as possible. At midnight the day of admission he was found to be in even worse condition, with more air hunger than he had before and his chest full of rales. Venesection was done, which seemed to relieve his dyspnea and cyanosis. His pulse however did not become any less at that time; it was 120 to 130, at no time going below 120. By morning his chest had cleared so that the signs were much the same as on entry. On morphine given at least once every three hours, digitalis and rather frequent caffeine he had a stormy day, with his paroxysmal cough continuing. He had a great deal of difficulty in getting his breath. The pulse continued 140 to 150. The blood pressure stayed up pretty well, the systolic not below 115 throughout the day. He continued to be quite cyanotic. No irregularity in the heart. An electrocardiogram showed no changes that would not be compatible with his age. We had a portable chest plate that day. During the night he continued in about the same state. At four in the morning the blood pressure fell to about 80 or 90 systolic. The heart rate continued at 140 to 150. He petered out during the next four hours. Venesection was of no avail. We thought that the physical signs were due to a diminished aeration of the right lower lobe, and that there was no fluid.

The x-ray films show dullness at the right base which has the appearance of fluid obliterating the outline of the diaphragm. It rises somewhat higher in the median than in the axillary line. The costophrenic sinus is obliterated. The heart is not particularly enlarged and apparently not displaced. In addition we have this coarse, rather soft mottling scattered throughout the lung fields. There is dullness at the right apex. That might be part of the same process that is present at the base, that is, fluid. The plates were taken with the patient lying down. The process in the lung is of a bronchopneumonic character and could be due to a number of things. We see appearances like this in malignancy, also in heart failure. I do not attempt to say what the process is due to here. (Holmes).

### Discussion by Dr. S. I. Bloomhardt, Phoenix

The important points in this history are cough, orthopnea, weakness, and cyanosis in a man of 65. He had been apparently perfectly well until these symptoms began, and he rapidly became worse in spite of treatment and died six weeks later.

In discussing this case, we would first like to mention some of the common causes of dyspnea and cyanosis. Pulmonary tuberculosis is, probably, the most common cause, but as this man was perfectly well up to the time of the beginning of these symptoms and this condition only lasted six weeks, we feel like we could rule out pulmonary tuberculosis. Cardiac disease; it is mentioned that there was no peripheral edema and we do not believe that one could have such a marked orthopnea and cyanosis from heart disease without some edema of the extremities; also, the x-ray picture and the electrocardiogram did not reveal any abnormalities of the heart. Sometimes, there are marked changes in the heart that are not revealed by x-rays or other examinations. It is said that this man was extremely emaciated. With such emaciation, our first thought would be tuberculosis or a malignant disease. Could there be a malignancy of the lung. Six weeks seems to be entirely too short a time for malignancy to cause such severe symptoms. A pneumothorax causes cyanosis and dyspnea but there is no history of a sudden onset or shock that is usually experienced in a spontaneous pneumothorax. A foreign body in one of the large bronchi could cause these symptoms, but there is no history of such a condition. A new growth pressing on the trachea or main bronchi might also cause these symptoms but we do not believe there is sufficient evidence to warrant this diagnosis. Miliary tuberculosis may be so acute as to cause death in one or two weeks. It is usually observed in three types,—the cerebral and typhoid types are the most common and the pulmonary type less frequent. In the pulmonary type of miliary tuberculosis, we have an extreme dyspnea entirely out of proportion to the amount of lung apparently involved. There is also, usually quite a marked cyanosis; also, an irregular temperature. The leukocytosis, the day before death was probably due to a terminal infection. There was, no doubt, quite a marked weakness of the heart as the rate came faster each day and the systolic blood pressure became lower. This could be accounted for by a weakened heart muscle due to toxemia and insufficient food supply. The history in this case is not complete enough to make an exact diagnosis. We believe it is either a disseminated malignant disease of the lungs or an acute miliary tuberculosis of the lungs of the pulmonary type. If there was no fever throughout the disease we certainly would not suspect miliary tuberculosis; also the age would be against tuberculosis. My colleagues lean to the diagnosis of malignancy. I will place my vote on miliary tuberculosis. If, however, there was no fever, I would then think it is a disseminated malignancy of the lungs.

### Discussion by Dr. Victor Randolph, Phoenix

Chronic cough in a man 65 years old is most often due to chronic bronchitis which in a good many cases is secondary to cardiac conditions. In this case it makes us think of latent bronchitis or bronchiectasis, chronic cardiac weakness which has reached the stage of failure or of acute bronchitis or of some chronic latent infection such as tuberculosis or mycotic disease, malignancy or syphilis.

The physical examination apparently rules out any cardiac condition except hypertension which has recently reached a lower level but the electro-

cardiograph rules this out also. We have then some pulmonary condition as the cause. We can now say that this record as a whole illustrates very well the type of study which seems to have been made in a great many of the pulmonary cases which are referred to Arizona by eastern physicians. There is no record of sputum examination. There is also in this record no temperature findings. It is conceivable that this man had acute bronchitis which developed during a period of six weeks into bronchopneumonia. It is also possible that he had latent pulmonary tuberculosis which developed into a bronchopneumonic type. However, in the absence of any temperature record and sputum examination, we can say nothing further. We are forced to the conclusion that he has an obstructive lesion in the right lower bronchus which is sufficient to give physical signs and x-ray signs. The fact that the x-ray densities extend higher along the medial portion of the right chest than laterally is in favor of malignancy more than of fluid that may be present. The other densities in the chest which were interpreted as bronchopneumonic may well have been metastatic malignancy. We can consider this whole picture as primary malignancy in the right lower bronchus although we cannot entirely rule out the possibility of a primary source in the rectum or some other small primary source. This of course is unlikely because of the absence of abdominal masses. We may find malignancy with terminal pulmonic patches. As a second diagnosis we would consider simply broncho pneumonia with long standing hypertension.

### DIAGNOSIS

- (1) Carcinoma of right lower bronchus, with metastatic malignancy of lungs.
- (2) Bronchopneumonia.
- (3) Tuberculosis.

### Autopsy Discussion by Dr. Tracy B. Mallory (Massachusetts General Hospital, v. *ibid.*)

This case is in many ways one of the undiagnosable. The primary disease was cancer of the stomach. I think there is no question that his major symptoms were due to pleurisy on the right side. At autopsy 1400 cubic centimeters of frankly bloody fluid was found there. The story of six weeks' unproductive cough and dyspnea means that the fluid was there all the time. We were much interested at the time of autopsy because we could not find any gross evidence of tumor in the pleura or in the lung. But when the sections came through there were microscopic emboli of tumor in vessels and lymphatics throughout the lung. I am pretty sure that if one had looked at the blood smear very carefully some tumor cells would have been picked up in that.

Both lungs are involved though the process is a little more marked on the left. The physical signs in this case are of interest and unquestionably misleading. I have a very vivid recollection of a case I saw as an interne which had every possible sign of consolidation, including increased tactile fremitus. The story, however, was that of pleurisy, and when we put in a needle 1800 cubic centimeters of fluid was withdrawn.

The tumor in the stomach was a partially annular tumor encircling about two-thirds of the stomach, causing partial but not very great obstruction.

### ANATOMIC DIAGNOSIS

1. Primary disease.  
Carcinoma of the stomach.
2. Secondary or terminal lesions.  
Multiple microscopic tumor emboli of the lungs.  
Carcinomatous pleuritis.  
Hemothorax, left.



## JAUNDICE AND ASCITES IN A BOY OF EIGHTEEN

(Case 14281, Cabot's Case Records, New Eng. Jour. of Med., Aug. 20, 1928, page 435).

### Case History

An American schoolboy of eighteen entered the hospital September 28 with a diagnosis by his physician of cirrhosis of the liver.

A year and a half before admission when in apparently good health he woke up at night with a very sharp pain in the abdomen localized below the umbilicus, more on the right. It doubled him for twelve minutes, then gradually wore off. He stayed in bed for two days. There were no clay colored stools or jaundice. From thirteen to seven months before admission he had gas (heartburn) relieved by white powders given by his physician. A year before admission after a cold in the head a physician found a slight infection of the gallbladder with some jaundice. He had dull generalized headache when walking, but no other pain. He was in bed a week and recovered completely in three weeks. His urine was dark. During the next six months he was not quite in his usual health and had three similar attacks, two of them just before the holidays, when he had been eating too much candy. As the last attack was subsiding, six months before admission, he went to a physician, who found a severe bronchitis which lasted three weeks. There was also an acute ear. The liver was somewhat enlarged. There was more or less continuous right sided pain along the eighth and ninth ribs relieved by lying on his right side, possibly pleurisy. He vomited once. The vomitus contained dark material resembling old blood. At the onset of the next attack, three months before admission, his physician found an enlarged liver, ascites and edema of the feet and legs. The temperature was 101° to 105° for three weeks. During this period there were night sweats. All the symptoms then disappeared. Two weeks before admission the patient had a severe cold followed by symptoms similar to those of the last attack. These symptoms persisted. With the cold he had large glands in the neck which had subsided at admission. He had been on a skim milk diet with sodium phosphate enough to keep his movements watery. He had vomited only once; blood in the vomitus was questionable.

One grandfather died of cancer. The family history is otherwise not important.

The patient had had no serious diseases, but had always been in perfect health and very strong until the present illness. Six months before admission he had a questionable pleurisy. Four months before admission he had a purulent discharge from the right ear which cleared up. He urinated once or twice at night. At admission his mouth was sore, possibly from a wisdom tooth. Six months ago he weighed 140 pounds; his present weight was 142.

Clinical examination showed a weak, wasted, ill-nourished boy with dry and jaundiced skin, jaundiced sclerae and sparse hair, unable to sit up. The tonsils were enlarged, cryptic, and filled with cellular debris. There were pea-sized axillary glands. The chest was flat. The ribs were prominent. The apex impulse of the heart was not seen or felt. There was no enlargement to percussion. The sounds and action were normal. The pulmonic second sound was accentuated. There was a systolic murmur in the left third interspace. Blood pressure 100/50 and 30. There was some dullness at the bases of the lungs behind. The abdomen was tense and shining, with shifting dullness, very marked fluid

wave and an air bubble. The liver edge was felt by ballottement three finger-breadths down at least, slightly tender. The spleen was felt in the same way three fingers down. There was slight umbilical hernia. The scrotum was filled with fluid and enlarged to the size of an orange. Both legs showed pitting edema to the thighs. The pupils were normal. The knee-jerks were obtained on reinforcement.

Before operation urine normal in amount, specific gravity 1.040 to 1.020, cloudy at 4 of 6 examinations, alkaline at all, the slightest possible trace to a very slight trace of albumin at 5, bile in 6 of 7 specimens, 0 to 1 leukocytes and 0 to 1 red cells per field in one of six specimens of sediment. Blood: 3,450 leukocytes, 52 per cent, polymorphonuclears, 24 per cent, lymphocytes, 12 per cent, large mononuclears, 12 per cent unclassified. (Differential on a basis of 25 cells.) Hemoglobin 45 per cent., 3,000,000 to 2,600,000 to 3,100,000 reds, achromia, slight variation in size and shape, no stippling or polychromatophilia. Platelets decreased. Reticulated cells 1 per cent. Icteric index 50 at admission, 20 October 6 and 12, 18 October 17. Bleeding time 8½ minutes to 4½ minutes. Clotting time 7 to 9 minutes. Retraction normal. Fragility test began at 44, complete at 28. Wassermann negative. Van den Bergh test direct, positive, quantitative 8.8 milligrams per 100 cubic centimeters. Rosenthal bromsulphalein test: after 30 minutes 20 per cent. Cholesterol (serum), .084 per cent. Stools: guaiac negative at 3 examinations, bile indefinite at 2.

Until October 12 temperature 97° to 101°, then 98° to 103° until operation. Before operation pulse 78 to 121, respirations 12 to 32.

The day of admission an abdominal tap gave 4,000 cubic centimeters of clear bile stained fluid, specific gravity, 1.008, 500 red cells and 100 leukocytes, mostly lymphocytes; culture, no growth. Immediately after the tap the liver edge was felt two-thirds of the way down to the umbilicus, extending well to the left. The edge was sharp and slightly tender, and appeared grossly irregular, as if the liver were lobulated. The spleen was felt 2 centimeters below the costal margin. The patient was more comfortable after the tap.

An x-ray plate taken October 4 after a barium meal showed a very large gastric outline. The stomach was apparently distended by gas. The outline of the transverse colon was also visible and appeared to be filled with gas. The diaphragm was high on both sides. Just above it on the right there was a triangular area of increased density with very sharply defined margins, possibly an area of atelectasis of the lung. Otherwise the examination of the chest was negative. There was nothing unusual in the appearance of the heart shadow.

The jaundice cleared rapidly and by October 7 was nearly gone. Distention was now the chief complaint. The fluid in the abdomen reaccumulated. The patient was symptomatically better.

October 21 a fluoroscopic examination of the stomach without barium showed a large amount of gas in this region. The colon was also distended with gas as in the previous examination.

After a number of consultations operation was done October 22. After the second day the temperature came down to normal. There was moderate distention relieved by enemas. The wound was in good condition. The patient however did not look very well. The temperature was 100° October 29 and after this ranged between 99.2° and 101.9°. October 31 the patient was much worse,

irrational part of the time, with very poor nutrition. Intravenous glucose was given without result.

November 1 blood examination showed 9900 leukocytes, hemoglobin 60 per cent., 3,300,000 red cells fairly well filled with hemoglobin, considerable variation in size, but only slight poikilocytosis; platelets normal. A count of about 500 cells showed no lymphocytes, 99 per cent. polymorphonuclears, a few immature and a few old but no more than a normal smear would show. No smudges were made out.

Discussion by Dr. Frank J. Milloy, Phoenix.  
(Phoenix Clinical Club, Apr. 14, 1930).

The best way to approach the diagnosis in this case is to consider the main symptom and physical finding, and that is ascites. Eighty-eight per cent of the cases of ascites are caused by cardiac or renal disease, hepatic cirrhosis, or peritoneal tuberculosis, in the order of frequency named. The other twelve per cent are caused by malignancies, anemias, adhesive pericarditis and various other unusual conditions. This history and physical findings do not suggest very strongly a cirrhosis of the liver, either biliary or atrophic. Neither is it due to renal disease. It could very readily be due to cardiac disease, but cardiac disease is not operated upon, so that it cannot be cardiac disease alone, although there is no doubt some myocardial weakness present and some cardiac decompensation which is probably secondary to the primary disease. This though there is no doubt some myocardial weakness present and some cardiac decompensation which is probably secondary to the primary disease. This leaves, as the most likely cause, peritoneal tuberculosis, or some of the less frequent causes of ascites.

The history of onset in this case, with a more or less continual train of digestive symptoms, the irregular periods of temperature, the age of the patient, all strongly suggest peritoneal tuberculosis. The loss in weight, the drop in blood pressure some glandular enlargement occur in tuberculosis; also the discharging ear. The character of the ascites is not typical of tuberculous effusion in the peritoneum but it does occur with as low a specific gravity as this. The prevalence of lymphocytes and the absence of growth on culture fits with a tuberculous effusion. The x-ray examinations, showing the stomach and intestines more or less distended with gas is what one would expect with peritoneal involvement. The secondary anemia and marked leucopenia, and high lymphocyte count fit in exactly with peritoneal tuberculosis. But there are still many symptoms unexplained. The blood picture is identical with that which occurs in Banti's disease, and that condition would explain the jaundice also. But the spleen is hardly large enough, since Banti's disease produces one of the largest spleens that occur in medical practice. The absence of blood in the stools and absence of hematemesis is against Banti's disease as well as cirrhosis of the liver. If the patient had had Banti's disease, the operation could have been for the removal of the spleen. There is a marked similarity between Banti's disease and Hodgkin's disease and this patient could have had an abdominal Hodgkin's but if this were true, a serious error occurred when the patient was operated upon.

Adhesive pericarditis will explain more of the physical findings in this patient than any of the above conditions. You could expect an anemia but it would be very unlikely to have a leucopenia and

a lymphocytosis. The generalized edema and ascites and enlargement of the liver and spleen could all be due to failing myocardium, which could be secondary to tuberculous peritonitis, Banti's disease, or any other long standing sickness. But with the other cardiac findings, it is very probable that the boy had an endocardial involvement. The accentuated second pulmonic and systolic murmur strongly suggest mitral disease. The high pulse pressures of 50 and 70 and the low diastolic pressure of 30 are almost certain to be aortic disease. The preliminary history of this patient could have been caused by a low grade infective endocarditis. Such an infection would explain the enlarged glands in the neck which subsided later. If they had been tuberculous glands they probably would not have subsided. The infective endocarditis could have caused this valvular disease and then could have produced a pericarditis resulting in an adhesive form. The inability to see or palpate the apex impulse of a heart as decompensated as this heart would be compatible with an adhesive pericarditis, and it would be hard to explain it in any other way. The jaundice was probably caused by pressure in some way on the bile ducts, as it subsided as soon as the pressure was released. The operation was performed to relieve the pericardial adhesions. In the absence of a blood culture and the report of a guinea pig inoculation with the ascitic fluid, both of which have probably been purposely omitted to make the case interesting, it seems as if some guessing will have to be done in deciding on a diagnosis. I think it rests between tuberculous peritonitis, Banti's disease, and adhesive pericarditis with an associated endocarditis; a possible fourth condition is abdominal Hodgkin's. All the first three are mostly likely to occur at this age and all three are amenable to surgical treatment. In the absence of a very large spleen, the blood picture is the only thing that is typical of Banti's. Absence of hematemesis and negative guaiac tests are against it. Negative lungs, negative history and negative other foci of infection, are against tuberculosis, although the boy could contract the bovine type through the intestines. But peritoneal tuberculosis, while it will explain the blood picture and ascitic fluid, hardly explains all the cardiac symptoms and findings. If we can disregard some of the laboratory findings and make a diagnosis on the symptoms and physical findings, I think it will be,

Adhesive Pericarditis

Chronic Endocarditis (rheumatic type).

Discussion by Dr. O. H. Brown, Phoenix.

The high points in this record are: A boy, 18 years of age entering the hospital, gave following history. One and one-half years ago he had an acute attack of pain in right middle abdomen, apparently appendicitis. For about six months after the appendicitis he had heartburn and gas. A year before he had a gallbladder infection with jaundice and dark urine, followed in next few months by three similar attacks. Shortly before admission he had bronchitis, ear discharge and pain along the right lower base of the lung. He vomited a material which looked like blood. Three months before admission he had enlarged liver, ascites and edema of the feet and legs with temperature up to 105. He had been subject to nocturia. He was a weak, wasted, ill-looking boy with a dry jaundiced skin and sclerae. Tonsils were large and diseased. Axillary glands were pea sized. Systolic murmur in the left, third interspace. Diastolic blood pressure as low as 30, systolic 100. Spleen was enlarged. The icteric index was as high as 50 per cent. There



was leukopenia and moderate anemia. The direct Van den Bergh was positive. The Rosenthal was 20 per cent. Fragility test was normal or a bit better than normal. The ascitic fluid was withdrawn and the liver was found to be markedly irregular as though lobulated. Stomach was much enlarged. Colon was distended. A small indurated area in the base of the right lung was found; edges were sharply defined. The diaphragm was high. Patient was operated upon. From this history it seems definite that the patient had a large liver and a large spleen with obstructive jaundice. There was also evidence of obstruction to the outlet of the stomach. Probably also something was interfering with the passage of fecal material through the intestines as the colon was much dilated.

The enlargement of the liver and the spleen together with the anemia makes one think of some type of splenic anemia. Cirrhosis of the liver, however, may explain the picture even though cirrhosis more commonly occurs later in life. Enlargement of the spleen suggest Banti's disease but splenic enlargement also occurs in cirrhosis. In cirrhosis, however, we ordinarily get leukocytosis. In Banti's disease there is an increase of fragility of the corpuscles. In this case the fragility test was normal. The edema and the jaundice may both be explained by a severe grade of portal cirrhosis. Likewise the heart murmur may be explained by the advanced grade of cirrhosis. It is very common for a contracted liver to be nodular in cirrhosis but this liver was large.

Hodgkin's disease may affect any part of the body though the common place is in the neck, on one or both sides. It may produce extensive edema and interfere with circulation and may obstruct other organs. It is also common to see a large spleen with Hodgkin's and it does produce an enlargement of the liver. Leukopenia is the rule. The fragility test is not greatly altered.

My guess at the diagnosis then is Hodgkin's disease of the abdomen producing obstructive jaundice and edema and nodules in the liver and enlargement of the spleen; moderate cardiac dilation; secondary anemia.

Discussion, in part, by Dr. Richard C. Cabot.

Cirrhosis of the liver is a very surprising diagnosis at that age.

Tuberculous peritonitis is possible. There is also a case I happen to remember here, a chronic pericarditis working through the diaphragm and to the capsule of the liver, with actual cirrhosis.

Some of that increased weight was presumably due to ascites and edema.

The main thing we have to bear in mind as we come to the physical examination is that the boy had ascites, apparently enlarged liver and some previous attacks with fever and symptoms that sound like gall bladder inflammation. Of course gall bladder inflammation cannot account for enlarged liver and ascites. He may perfectly well have had both, but he could not have the latter as the result of the former. No one has said anything about the spleen, or of the possibility of the only type of neoplasm seen at this age often, that is the leukemic. He had some enlargement of glands in the neck, but it subsided. We must remember the possibility of tuberculous peritonitis. But I am quite at sea prior to the physical examination.

That systolic murmur does not mean anything in a boy with this clinical picture.

With a big liver dullness at the bases of the

lungs is probably due to a high diaphragm, not to anything wrong in the chest.

"The abdomen was tense and shining, with shifting dullness, very marked fluid wave and an air bubble," that is, the intestines floating up in the epigastrium.

I do not see anything about sugar in the urine report, but I assume that it is absent. Of course in an emaciated boy we naturally would wonder if it had shown in the urine.

The blood shows a secondary anemia. The chief thing about the blood is the extraordinarily low leukocyte count.

Differential diagnosis: It seems to me we have to say he has a cirrhosis of the liver, as they said in the beginning. I do not know what else would give such a chronic portal obstruction as we have evidence of here. The tap fluid is enough to throw out tuberculous peritonitis. After such a tap if there were any malignant disease we ought to be able to feel it.

We are not given any evidence of a chronic pericarditis. When you put these things aside I do not know anything that is left to cause such an ascites as this except a chronic interstitial process in the liver. What type can it be? I do not see any probability at all that it is the usual type which most of us associate with alcohol. Syphilis of course comes to our minds when we hear that the liver edge was lobulated. But we have nothing else to back up that diagnosis. Syphilis of the liver at this age is unusual. We do not usually have so much ascites. We often do not have jaundice, and I never knew it to kill anybody without other troubles.

Acute yellow atrophy or subacute yellow atrophy, toxic hepatitis, I can not exclude. We seem to have a big liver, and that, if it is correct, would exclude it. There may be stages of a toxic hepatitis without any diminution in the size of the liver. But we should not expect it to go on to death without diminution in its size. That is the chief evidence against it; but I do not feel able to exclude it. He has had two infections, one in the abdomen and one in the ear. It might be an infectious type of cirrhosis starting from a cholangitis and spreading up from the bile passages.

His anemia is an outstanding thing. We have to consider this as a hemolytic type of anemia and the hemolytic type of jaundice, connected with some abnormal activities in the spleen. I have not much doubt that the operation done was splenectomy for the removal of trouble supposed to be of that type. Between that and the infectious type of cirrhosis I do not know any way to make a clear differentiation.

Banti's disease is one of the most cloudy clinical entities that we have. I think the diagnosis cannot be made unless we prove first that we have an enlarged spleen and later a cirrhotic liver. It cannot be excluded here, but I cannot say anything in its favor.

I see no reason to consider Hodgkin's disease. We hear of cases that are confined to the spleen and liver, but we should have no evidence outside that, especially when we have such a very low white count. I should think we had better not. I have no idea how to explain that differential count of 99 per cent. of polymorphonuclears. I have never seen so high a count. I feel rather skeptical.

#### PRE-OPERATIVE DIAGNOSIS

Infectious jaundice.

#### OPERATION

The abdomen was found to be filled with clear fluid. The liver was very much enlarged, perfect-

ly smooth and instead of being dark was rather speckled in appearance and lighter in color than normal. A small piece was taken out for microscopic study. The spleen was much enlarged, about eight inches in length, much thickened and also felt smooth. The gallbladder was much thickened and edematous. In the retroperitoneal tissue above the pancreas there seemed to be more or less thickening or edema, as the tissue was thick enough to prevent the feeling of the normal structures. A tube was put into the gallbladder.

DR. MALLORY: The microscopic findings were a complete surprise to everybody. The liver showed a very marked infiltration around all the portal areas of large, immature, abnormal lymphocytes showing very numerous mitoses. The histologic appearances were typical of lymphatic leukemia. I think the only possible diagnosis is an aleukemic lymphatic leukemia.

In leukemia of this type the lymphocytes are very abnormal. I suppose the explanation is that they are not sufficiently differentiated to live in the circulating blood stream. They are essentially tumor cells; no normal lymphocytes are being produced at all.

DR. CABOT: Should you assume that we should have found something in the marrow?

DR. MALLORY: Yes. I believe all the organs would be similarly infiltrated.

#### HISTOLOGIC DIAGNOSIS

Lymphoblastoma.

### ENURESIS

#### Review of Current Literature

ORVILLE HARRY BROWN, M.D. Ph. D.  
Phoenix, Arizona.

(Read before the Maricopa County Medical Society, October 29, 1930).

Enuresis according to the dictionary is involuntary emptying of the bladder.

Adrien Bleyer<sup>1</sup> defines enuresis as a disturbance of the physiology of micturition in which the physiologic control of the brain is blocked by stronger stimuli which have to do with the nervous mechanism of the bladder. Enuresis *vera* is a term he suggests to indicate the type where there is disassociation of the voluntary nervous system from the act of micturition; and pseudo-enuresis he uses for the type in which influencing the will relieves the condition.

According to Israel S. Wechsler<sup>2</sup> incontinence may develop in tabes, combined sclerosis, myelitis, tumors of spinal cord, cauda equina lesions, hematomyelia of lumbar cord, injuries to cord, and spina bifida.

M. B. Wesson<sup>3</sup> and H. H. Young<sup>4</sup> made anatomic and embryologic studies which indicate micturition is ordinarily an act of the will upon the trigone of the bladder against the weak sphincters which are under the control of the involuntary nervous system.

D. I. Macht<sup>5</sup> took advantage of the selective actions of epinephrin and ergotoxin on the sympathetic system and of pilocarpin and atropin on the parasympathetic and found that the innervation of the trigone of the bladder is independent of the rest of the bladder.

Chetwood<sup>6</sup> says in children the detrusor muscles of the bladder are relatively thick and strong as compared with the spincters, and therefore the bladder may empty with great ease.

H. H. Young<sup>1</sup> thinks relaxation of the bladder

sphincter is not an act of inhibition but is brought about by the muscles of the trigone.

John McK. Mitchell<sup>8</sup> makes the point that throughout childhood the diet is primarily liquid and hence there is a relatively large quantity of urine calling for frequent emptyings of the bladder. He says it is often as late as the fourth to fifth year before the parents become duly impressed that the bed wetting is an abnormal habit. He also says polyuria is a cause in certain cases, sleeping cold may cause excessive diuresis, and excessive intake of fluid, diabetes mellitus and insepitus and nephritis, etc. may be factors.

Grover<sup>9</sup> studied 200 cases of enuresis and found in the family a history of it in 56 per cent of the cases.

Theodore H. Weisenburg<sup>10</sup> reported upon an investigation into enuresis by Forrest N. Anderson who spent a year on the problem, "diurnal bladder control is secured at an average age of 17 months, nocturnal bladder control at an average age of 23 months, with an average training period of six months." He says "the infant bladder is ordinarily of sufficient size to hold the night's secretion of urine; fluid restrictions are of no great value; emotional factors are the predominant factors in causing or at least in continuing enuresis." Physical factors may be of importance especially from a suggestive angle.

Ralph C. Hamill<sup>11</sup>, basing his ideas on an extensive experience, concludes that enuresis is a conduct disorder; that it is of prime importance that the child should assume responsibility for its conduct in its sleep; and that all other forms of treatment are against the child's interest. In a group of 55 cases who properly followed treatment 72 per cent recovered. It is Hamill's view that all persons to greater or less extent make themselves responsible for certain acts during sleep; nearly all react during sleep to stimuli of micturition; many persons can waken at definitely specified hours, etc.

K. M. Horton<sup>12</sup> had a series of 60 cases and the majority occurred after control of micturition had once been established. Practically 50 per cent had no physical abnormalities; one case only had phimosis. It was most common for enuresis to be both diurnal and nocturnal. He says, "the children were in most cases nervously unstable, highly strung persons, abnormally sensitive to praise or blame" and that many cases exhibited home incompatibilities. All cases responded to suggestive measures in combination with giving the belladonna.

Basil A. Hayes<sup>13</sup> discusses the bladder and urethra abnormalities which cause incontinence. He writes: "The sphincters of the bladder consist of two muscles, one a weak voluntary circular and the other involuntary longitudinal fibers which pull on the anterior portion of the bladder neck. They are assisted by the levator and muscles which lift up the entire bladder floor.

The expulsive force of the bladder is not sufficient under ordinary circumstances to force open these sphincters. There is provided also an opening muscle which lies on the trigone and runs through the orifice of the bladder neck. Voluntary contraction of this muscle pulls open the closed sphincter.

True incontinence can only occur if this muscle remains in a constant spasm or if the sphincter loses its tone and remains open. Even if the first of these occurs, the external sphincter will hold the stream.

Ulceration, tumors, nerve lesions, sagging of bladder floor, trauma, and congenital defects are all

(Continued on page 602)



# Southwestern Medicine

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## PHOENIX NEWSPAPER COMBINATION

The purchase of the Gazette by the Arizona Republican, at Phoenix, Ariz., was a nine days' topic of comment, and the cause of many congratulations to the owners of the Republican,—recently changed to the Arizona Republic. Mr. Charles Stauffer invited about three hundred representative citizens to a dinner at the Westward Ho, and made announcement of this purchase and the combination of the two papers under one management, amid scenes of great enthusiasm.

The phase of this combination which will be of special interest to the medical profession will be the policy of the papers with regard to advertisements. Many years ago the Republican adopted the policy of the most advanced newspapers, of refusing its advertising columns to all quack remedies and all medical or surgical appliances of questionable merit. This has not been the policy of the Gazette in times past, but it is anticipated that this will be changed in the future. Some of the advertisements still being carried will not measure up to the standards of the Republic, but doubtless these are being carried on contracts still in force and it is expected that both papers will be placed on the same high plane, so far as advertisements are concerned, as they have been in their news and editorial columns.

We welcome this combination and congratulate the owners of the Arizona Republic on their courage and farsighted wisdom.

## FINISHING OUR FOURTEENTH YEAR

This issue closes the fourteenth year of publication of SOUTHWESTERN MEDICINE. Since there has come to our attention recently evidence of misconception, in otherwise well informed circles, of the relation to this journal of the various organi-

zations interested in it, it seems appropriate to set forth, again, the essentials of the business organization.

SOUTHWESTERN MEDICINE is owned jointly by four organizations, namely: the El Paso County Medical Society, the New Mexico State Medical Society, the Arizona State Medical Association, and the Medical & Surgical Association of the Southwest. Each of these organizations selects from its membership two members of a Board of Managers. This Board elects its own chairman and secretary, and has entire charge of the management of the journal and the direction of its policies. The Board appoints the Editor, selects the publisher, designates who shall act as business manager, etc. The Associate Editors are appointed by three constituent organizations,—to represent El Paso, New Mexico and Arizona, respectively. In 1921 the present editor was appointed, a business manager and publisher selected, and since that time no changes have been made in these.

Some confusion has arisen on account of the circumstance, entirely fortuitous, that the secretary of the Medical & Surgical Association of the Southwest and the editor of Southwestern Medicine, happen at present to be one person. This does not give the Medical & Surgical Association any rights not possessed by any one of the other organizations, with regard to the journal. The journal profits from this double relation, and the Association does not suffer, but either the Board of Managers or the Association can terminate this concentration of functions, any time they see fit, by placing some other person in one of these offices, or by placing two entirely different people from the present incumbent, in both of them.

**ST. JOSEPH'S HOSPITAL, (Phoenix)****October Staff Meeting**

The St. Joseph's Hospital Staff met on October 13, 1930, promptly at 8 p. m., with forty-five doctors present. The meeting was called to order by Dr. Brockway and the minutes of the previous staff meeting, and the executive council minutes, were read by Dr. Greer, secretary.

The problem of a meeting night was discussed. It was moved by Dr. Mills that we not approve the motion of the Maricopa County Medical Society, which had been carried previously, to change our meeting night from Monday to Tuesday night. Amendment was made to this motion, by Dr. Sweek, that it be necessary to bring the signature of fifteen members before the matter of changing the meeting night could be voted upon. This was included in Dr. Mills' motion by Dr. Mills' consent. The motion was seconded by Dr. Felch. After much discussion the motion was voted down, eight in favor and sixteen against. Dr. Jordan moved to retain Monday night as staff-meeting night and this motion was seconded by Dr. Bannister and upon vote there were thirteen for the motion and eleven against—many not voting. The chair ruled that the motion was carried and the meeting will continue Monday night as usual.

The following program was prepared by Dr. Frank Milloy:

Case No. 20387—Pre-eclamptic toxemia, presented by Dr. C. N. Ploussard, discussed by Dr. F. C. Jordan (See elsewhere in this issue.)

Case No. 18979—Fracture of right femur with separation of the lower epiphysis. To be presented by Dr. J. M. Greer, with open discussion following.

At the close of the discussion on Case No. 20387 there was no more time available and the meeting was turned over to the County Society.

J. M. GREER.  
Secretary.

**ST. JOSEPH'S HOSPITAL (Phoenix)****September Staff Meeting**

The first meeting of the season of the St. Joseph's Hospital Staff was held September 15, with forty-one members present. Due to the illness of Dr. Brockway, chief of staff, Dr. Palmer presided over the meeting.

The regular monthly analysis of hospital service was read by Dr. Milloy.

The program for the meeting was prepared by Dr. Goodrich and consisted of the following:

Case No. 20296—Intestinal obstruction following appendectomy. The presentation by Dr. Vernon Kennedy, was followed by general discussion.

Case No. 20451—Post-traumatic tetanus; presented by Dr. T. W. Woodman, and discussed by Dr. R. B. Raney. (See elsewhere in this issue.)

Case No. 20262—Subphrenic abscess, presented by Dr. Frank Milloy, and discussed by Dr. R. J. Stroud. (See elsewhere in this issue)

J. M. GREER,  
Secretary.

**BOOK REVIEWS**

PHYSICAL DIAGNOSIS, by Richard C. Cabot, M. D.; Tenth Edition, 529 pages; price, \$5; William Wood and Company, New York.

This important work is recognized as a standard of diagnostic methods and this 10th edition contains new material relating to coronary disease, electrocardiography, cancer of the lung, cardiac asthma, toxic hepatitis, and encephalitis lethargica. Revision has also been made of the chapters

covering laboratory methods and these sections have been brought up to date. This is a most practical book in that it presents only those methods which have been found of definite value.

THE MEDICAL CLINICS OF NORTH AMERICA. May, 1930. Vol. 13, No. 6, W. B. Saunders & Co., Philadelphia and London. This number is contributed by the Mayo Clinic. The cases cover a wide range of subjects and the case histories are concisely yet thoroughly presented. There are many illustrations including reproductions of x-ray films, photomicrographs and numerous charts and diagrams. This number contains the volume index.

H. P. M.

ARTERIAL HYPERTENSION. By Edward J. Steglitz, M.S., M.D., Assistant Clinical Professor of Medicine, Rush Medical College, University of Chicago, attending internist Chicago Lying-in-Hospital, assistant attending physician, Presbyterian Hospital. Cloth, price \$5.50, 280 pp. Paul B. Hoeber, Inc., New York.

The material of this monograph is derived from a series of lectures given at the Rush Medical College for several years past. In presenting this subject, the author places special emphasis on the etiology and upon the physiologic pathogenesis, showing that hypertension represents a physiologic reaction occurring in disease of the smaller arterioles, arteriolar hypertonia being the fundamental change and increase in intravascular pressure is secondary. There are 21 illustrations and the bibliography and the bibliographic subject-index is very complete, so that the reader may readily refer to original articles for further study.

H. P. M.

**REGISTRATION AT THE MEDICAL AND SURGICAL ASSOCIATION**

El Paso, November 6-8, 1930

V. K. Adams, Hurley, N. M.  
J. M. Alexander, Abilene, Tex.  
M. L. Alexander, Canutillo, Tex.  
Dwight Allison, El Paso.  
Walter C. Alvarez, Rochester, Minn.  
U. H. Anderson, El Paso.  
E. K. Armistead, El Paso.  
S. D. Armistead, El Paso.  
D. G. Arnold, El Paso.  
C. D. Awe, El Paso.  
C. V. Barley, Tucson, Ariz.  
Loren C. Barlow, Phoenix, Ariz.  
F. A. Barnes, El Paso.  
Frank O. Barrett, El Paso.  
L. H. Barry, Nacozari, Sonora.  
Willard Bartlett, St. Louis.  
A. P. Black, El Paso.  
W. D. Black, Barstow, Tex.  
W. M. Branch, El Paso.  
Joseph Brennemann, Winnetka, Ill.  
J. M. Britton, El Paso.  
John W. Brown, Marfa, Tex.  
W. L. Brown, El Paso.  
F. W. Butler, Safford, Ariz.  
Jim Camp, Pesos, Texas.  
Harry R. Carson, Phoenix, Ariz.  
G. G. Castleberry, Lubbock, Texas.  
John W. Cathcart, El Paso.  
Stewart Cooper, Abilene, Texas.  
P. G. Cornish, Jr., Albuquerque, N. M.  
F. H. Crail, Las Vegas, N. M.  
Branch Craige, El Paso.  
C. F. Cron, Van Horn, Tex.  
M. B. Culpepper, Carlsbad, N. M.  
E. J. Cummins, El Paso.  
M. A. Cunningham, Deming, N. M.



- Ward C. Curtis, El Paso.  
 E. A. Duncan, El Paso.  
 M. Edward Davis, Chicago.  
 C. G. Duncan, Socorro, N. M.  
 Frank Dolley, Los Angeles.  
 E. G. Earnheart, El Paso.  
 Orville Egbert, El Paso.  
 Crum Epler, Pueblo, Colo.  
 F. B. Evans, Alamogordo, N. M.  
 W. A. Fahey, Ft. Defiance, Ariz.  
 E. W. Fiske, Santa Fe, N. M.  
 C. H. Fitzgerald, Bisbee, Ariz.  
 W. H. Flamm, Amarillo, Tex.  
 Robt. S. Flinn, Phoenix, Ariz.  
 Dudley Fournier, Phoenix, Arizona.  
 Robt. T. Franklin, Glendale, Ariz.  
 Z. E. Funk, Santa Rosa, N. M.  
 H. K. Gallagher, Albuquerque, N. M.  
 Paul Gallagher, El Paso.  
 J. H. Gambrell, El Paso.  
 A. M. Ganaway, Valentine, Ariz.  
 F. D. Garrett, El Paso.  
 M. D. Gibbs, Roy, N. M.  
 C. H. Gellenthien, Valmora, N. M.  
 F. M. Gipple, Buffalo, N. Y.  
 C. D. Gibson, Pecos, Tex.  
 J. Madison Greer, Phoenix, Ariz.  
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 W. A. Guynes, El Paso.  
 S. M. Haffner, El Paso.  
 J. D. Hamer, Phoenix, Ariz.  
 T. C. Harper, Globe, Ariz.  
 J. K. Hazel, Jerome, Ariz.  
 T. Wade Hedrick, Abilene, Tex.  
 H. M. Helm, Douglas, Ariz.  
 George Herrmann, New Orleans, La.  
 F. T. Hoagland, Cananea, Sonora.  
 Ralph Homan, El Paso.  
 H. A. Ingalls, Roswell, N. M.  
 W. R. Jamieson, El Paso.  
 B. F. Jenness, El Paso.  
 F. C. Jordan, Phoenix, Ariz.  
 W. T. Joyner, Roswell, N. M.  
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 S. F. King, El Paso.  
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 Philip H. Kreuscher, Chicago.  
 J. W. Laws, El Paso.  
 M. I. Leff, Glendale, Ariz.  
 Fred Leslie, El Paso.  
 A. J. Lewis, Las Cruces, N. M.  
 T. C. Liddell, El Paso.  
 E. H. Linfield, Fort Bayard, N. M.  
 J. B. Littlefield, Tucson, Ariz.  
 W. R. Lovelace, Albuquerque, N. M.  
 K. D. Lynch, El Paso.  
 T. J. McCamant, El Paso.  
 Paul E. McChesney, El Paso.  
 R. L. Marrett, El Paso.  
 J. A. Martin, Fort Stockton, Tex.  
 James M. Martin, Dallas, Texas.  
 C. H. Mason, El Paso.  
 Y. M. Milam, Fabens, Texas.  
 E. S. Miller, Flagstaff, Ariz.  
 James Meason, Chandler, Ariz.  
 C. A. Miller, Las Cruces, N. M.  
 F. P. Miller, El Paso.  
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 J. G. Moir, Deming, N. M.  
 J. W. Morris, Safford, Ariz.  
 A. W. Multhauf, El Paso.  
 Mildred L. Murray, El Paso.  
 S. H. Newman, El Paso.  
 Alton Ochsner, New Orleans.  
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 W. W. Phillips, Roswell, N. M.  
 James A. Pickett, El Paso.  
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 E. G. Prentiss, El Paso.  
 E. D. Price, El Paso.  
 R. B. Raney, Phoenix, Ariz.  
 R. L. Ramey, El Paso.  
 D. M. Randell, Okmulgee, Okla.  
 Howell Randolph, Phoenix, Ariz.  
 J. A. Rawlings, El Paso, Texas.  
 J. Mott Rawlings, El Paso.  
 E. E. Reeves, Amarillo, Texas.  
 H. P. Reid, Fort Stanton, N. M.  
 C. F. Rennick, El Paso.  
 H. W. Rice, Morenci, Ariz.  
 Paul Rigney, El Paso.  
 Jacob Rogde, El Paso.  
 E. B. Rogers, El Paso.  
 H. Earl Rogers, El Paso.  
 W. P. Rogers, El Paso.  
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 W. A. Shields, Marcia, N. M.  
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 R. K. Smith, Tucson, Ariz.  
 W. R. Snow, Abilene, Tex.  
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 H. E. Stevenson, El Paso.  
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 E. D. Strong, El Paso.  
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 R. M. Strump, Winslow, Ariz.  
 C. T. Sturgeon, Los Angeles.  
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 C. E. Tucker, Anthony, N. M.  
 George Turner, El Paso.  
 S. T. Turner, El Paso.  
 James Vance, El Paso.  
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 G. Werley, El Paso.  
 H. E. Whiteacre, Tullarosa, N. M.  
 Wm. White, El Paso.  
 E. T. Wilkinson, El Paso.  
 S. E. Wilkinson, El Paso.  
 S. E. Wilson, El Paso.  
 W. H. Woolston, Albuquerque, N. M.

(Continued on page 600)



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PROGRESS THROUGH RESEARCH



(Continued from page 598.)

## Summary:—

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Mexico .....	3
Elsewhere .....	3
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	180

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## ENURESIS

### Review of Current Literature

(Continued from page 595.)

causes which operate to cause the internal ring to stand open.

The treatment consists in lifting the bladder floor and providing a tonic muscular sling to hold it up. This can be done very simply and easily by doing a perineorrhaphy in the male or female.

P. J. Crozier Griffith and A. Graeme Mitchell<sup>14</sup> write: "Most of the cases are a persistence of the condition normal to infancy which period is characterized by a powerful detrusor apparatus and an insufficient sphincter control of the bladder. A small number develop it after the normal control had been acquired." They describe the physiology of urination as a reflex act in which are concerned the bladder musculature, the efferent and afferent nerves, and the spinal centers for the nerves. Reflex stimuli may arise from pathologic conditions in any other part of the body and affect the detrusor muscle so as to call for urination. Finally there is the part played by the brain which should control urination even during sleep. Local irritations, inflammation, infestations, calculi, anatomical and urinary abnormalities, etc., may reflexly stimulate the detrusor muscles. Nervous excitability, general debility, malnutrition, anemia, glandular insufficiencies, over eating, etc., may also need to be seriously considered as important factors in the etiology of enuresis. Fatigue, over eating, sleeping on the back, too heavy covers, etc., may contribute to loss of the inhibitory control of the bladder during sleep.

Langley Porter and Wm. E. Carter<sup>15</sup> say: "Enuresis in older children when there is no definite condition that produces irritation of the genito-urinary tract, is essentially an expression of a maintained involuntary as opposed to a voluntary control. It means either that the child has never had the cerebral mastery of the pelvic viscera properly established, or that through bad environment and imperfect training, a neurotic habit has been encouraged; this happens even after cerebral control has been attained, with a reversion to the infantile involuntary type of bladder evacuation without central inhibition."

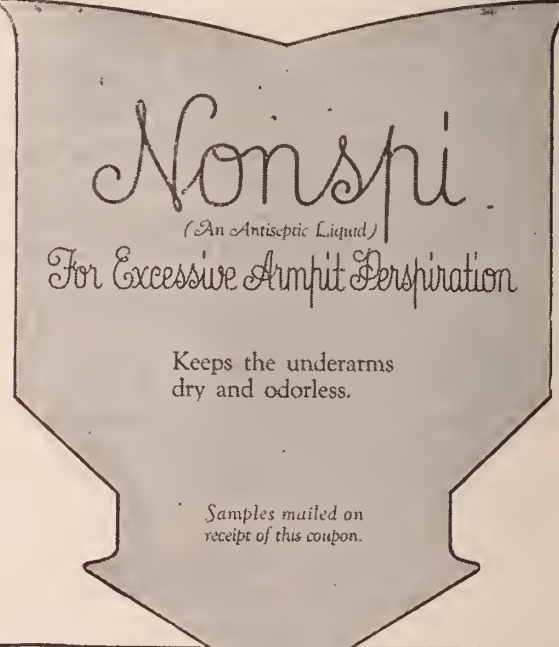
Lewis H. Adler<sup>16</sup> says that the etiology of enuresis may be one or more of a variety of conditions among which may be an incomplete development of the sphincter muscles, a debility of the neck of the bladder, abnormalities of penis or clitoris, cystitis, nephritis, pyelitis, vesical or renal calculi, inadequate control from the spinal cord nerve cen-

ters, glycosuria, rectal irritation, constipation, hyperacidity of the urine, over distention of the bladder, masturbation, genital trauma, and bladder relaxation which may be a local manifestation of general lack of tone of the entire muscular system from marked nutritional diseases.

McKee<sup>17</sup> says that the metabolic activity of the sensitive nerve cells is probably much disturbed and that diseases of the nerve centers are recognized as factors inducing enuresis.

Rachford<sup>18</sup> writes that in children enuresis is probably a true neurosis with a disturbance of the nerve centers in control of the bladder.

Nicholetopoulos<sup>19</sup> says that enuresis results from fatigue which causes children to sleep so heavily



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that they do not arouse when the stimulation from the full bladder occurs.

Leonard Williams<sup>20</sup> thinks that frequently a hypothyroid is the cause of enuresis in both adults and children.

Ozerekowski<sup>21</sup> has noted anesthesia of the bladder in a large portion of the cases.

Wachenstein<sup>22</sup> says that enuresis is probably essentially a habit development somewhat akin to tics and other spasm habits; it was frequently found associated with stuttering. He says that certain cases persist into adult life more often in females, and become hard to cure, as is the case with habit tics.

Monro<sup>23</sup> is of the opinion that heredity is a potent predisposing factor. In a family of six children the disorder seemed to be inherited from the father. He also says that two of the female children were more affected during the menstrual period; two others were subject to epilepsy.

Thiemich<sup>24</sup> says that enuresis is generally due to a nervous condition and that as a rule it is the children of neurotic parents who are affected with enuresis. He has observed epidemics of enuresis in institutions in which many children are grouped together.

Fuchs<sup>25</sup> has found occult spina bifida in 68.2 per cent of adults and 35 per cent of children with enuresis.

Constantiesco<sup>26</sup> observed two cases of nocturnal enuresis associated with renal tuberculosis and two other cases after nephrectomy.

Robson<sup>27</sup> had an incontinent woman age 20 in whom there seemed to be practically no bladder capacity.

Beilby<sup>28</sup> reports that three years observation in a state industrial school has made him form the conclusion that 90 per cent of enuresis is due to masturbation. He had 75 cases of enuresis in a total school population of 900.

C. E. McGork<sup>29</sup> says that in females it is important to examine the clitoris and perhaps to do circumcision. In nine cases he treated four women who had borne children. He has found a definite family tendency for enuresis.

J. Allen<sup>30</sup> divided the etiologic features into five groups; genito-urinary, nervousness, malformations, general and idiopathic. The urine may be at fault, either too acid or too alkaline; there may be pressure on the bladder or inflammation of various parts of the urinary tract; or there may be calculi, new growths, balanitis, vulvo-vaginitis, worms, and other local conditions. There may be malformation of the spinal cord or genitourinary tract. Among general causes he mentions rheumatism, thyroid insufficiency, diabetes, etc. He says that Still found enuresis associated with rheumatism in about five per cent of his cases.

Koplik<sup>31</sup> thinks enuresis is a functional neurosis; he has seen it persist into adulthood and present serious problems for treatment.

Holt<sup>32</sup> regards enuresis as a neurosis and thinks the solution is early training.

Editor<sup>33</sup> stresses the importance of excluding nocturnal epilepsy as the cause of nocturnal enuresis. If no organic basis is found the establishment of proper habit must be the solution of the trouble.

Isaac A. Abt, Herman M. Adler and Phyllis Bartelme<sup>34</sup> report in a study entitled "The Relationship Between the Onset of Speech and Intelligence" that "children who are enuretic at the age of three years or above learn to talk later than those who have established dry habits prior to that time."

(Continued in next Issue.)

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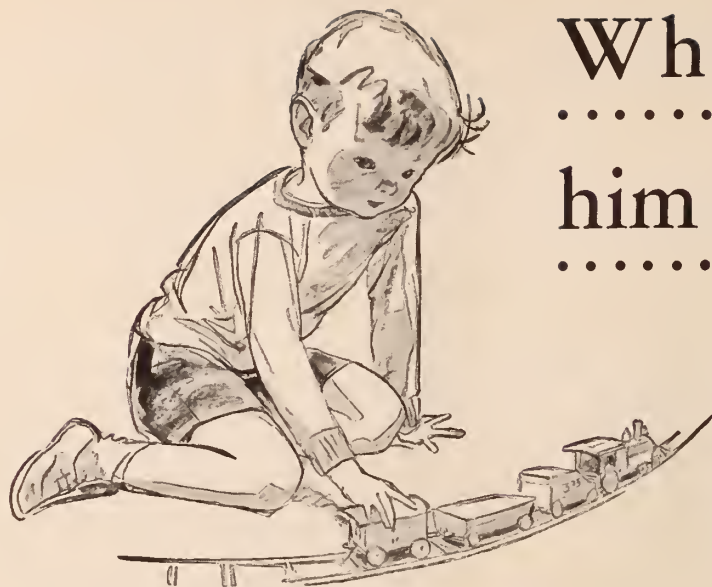
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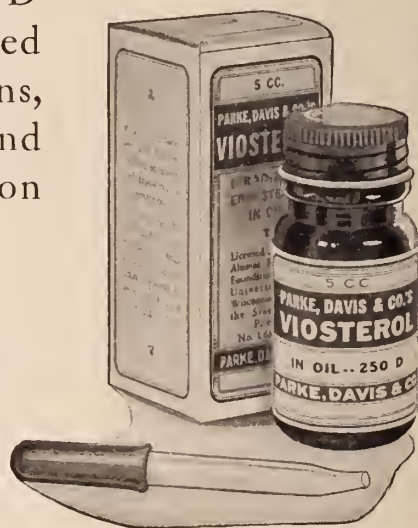
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